Computer Weekly

Thursday, September 8, 1983 Number 876 35p

EVEIONS . . . "Excellent news."

US scuttles the pirates

by George Black and Howard Karten

A MILESTONE decision made last week in a US court that computer programs can be copyrighted is being heralded as the beginning of the end for pirates.

Three judges of the Philadelphia appeals court ruled in favour of Apple and against a maker of Apple-II lookslikes, Franklin Computer of New Jersey. They laid down that protection was not confined to literature, flatly disagreeing with a British appeal court decision in 1981 that only truly literary works were covered.

Apple scored a victory over the Formula lookalike Pineapple in a district court earlier this year, but this is the first time it has reached appeal.

Now UK industry leaders hope the outcome will spur the government into framing its new copyright law, due since the Green Paper over two years ago.

"The Apple result is excellent news," said Doug Eyeions, director-general of the Computing Services Association. "The software business is international and each country must get its own legislation. We're getting restless about the situation here and want the civil servants to bring in the law that we're promised."

Both the CSA and its US equivalent ADAPSO are contributing to a World Intellectual Property Organisation inquiry into copyright law.

There are many program-protectors on the market and a £100,000 project is under discussion between the British Technology Group and the National Physical Laboratory, to develop a new physical lock. But most experts agree that there is an equal need for tougher laws.

The main obstacle to resolving the question in court has been reluctance of firms to face high costs; several wrangles have been settled privately.

Franklin admitted that its Ace 100 machine copied programs for the eight-bit bestseller, but argued that they were software and therefore not copyrightable. But the judges unanimously held that the Apple's DOS 3.3 operating system, Applesoft and Autostart-ROM were protected by copyright even though they were on a chip.

They reversed last year's verdict by the lower, federal district court which had supported Franklin's view that the only dispute was over a device for which Apple had no patent. American copyright lasts for 75 years; patent can only cover 17 years.

1,000 jobs are set for Scotland

A SCOTTISH Development Agency investment in Californian chip company International Microelectronics Products looks like paying off with a £60 million factory and 1,000 jobs. The SDA put £620,000 into IMP in return for a commitment that IMP would come to Scotland when it expanded overseas, or the SDA would get its money back. Now the two-year-old custom circuit maker wants a factory in operation by 1986.

Rair drops out

RAIR has dropped out of the terminal distribution market in a deal which sets up a new independent company, RTS Technology. Following a £1 million cash injection from Prudential earlier this year, Rair now wants to concentrate on marketing its multi-user business microcomputer. RTS Technology has taken over all orders, agency contracts and staff from Rair Terminals business.

Sinclair's £14m

SINCLAIR Research, suffering little from the cut-throat micro price war, turned in profits up 61% to £14 million on a turnover of £54.5 million last year. Buoyant UK Spectrum sales made up for disappointments in the US market. This year should be "pretty good" too, says Sinclair, with an up-market business computer giving a new market niche.

Grundy debts

GRUNDY Business Systems, which is expected to go into liquidation today, has about "250 creditors" and debts "in excess of £1.5 million". Tim Harris, of accountant Deloitte, Haskins and Sells, has received a number of interested enquiries.

Shareholders pull Dragon from brink

by John Riley

WELSH microcomputer maker Dragon Data was bailed out last week when institutional shareholders put together a £2.5 million financial rescue package.

The company has suffered a price-cutting war, production problems and a drop in demand during the summer. But the rescue package should see the company through until the expected Christmas sales rush.

"It was a seasonal product but nobody knew how seasonal," said Ron Artus, chairman of Prutec (the technology investment subsidiary of the Prudential Assurance Company, which holds 42% of Dragon's shares). "Who knows, if it had been a rainy summer sales might have been better, with more people staying indoors and using computers", he added. "The price cutting exacerbated the whole thing."

Dragon Data's managing director, Tony Clarke, is to step down ("for personal reasons") and Prutec has arranged for GEC to second one of its top executives to take Clarke's place temporarily. The Prudential is GEC's leading shareholder.

When asked if GEC, which recently angled to buy Torch, might be interested in taking over Dragon, Artus said: "I have no knowledge of this. We asked GEC for its help and it agreed to help with a temporary problem."

Artus also said that Dragon's creditors have not called in their debts, that the Dragon 32 is still in production and that there is "no chance of liquidation". He added, "The main shareholders will do what's necessary for the short term – that doesn't necessarily mean cash injection but could mean bank guarantees – and we forecast a bright future."

Among Dragon's shareholders are Prutec (42%), the Welsh Development Agency (23%), Mettoy (15.5%), and the National Water Board (8.6%). Dragon originally belonged to Mettoy, which makes Corgi toys and Wembley footballs, but last November Mettoy sold most of Dragon, gaining £900,000 to see it through its own financial problems.

DEC plans new range and Unix compatibility

by John Kavanagh

MINICOMPUTER market leader Digital Equipment (DEC) is working on a new 16-bit range and is planning to offer operating system compatibility from its Professional microcomputer up to its 32-bit Vax family through Unix.

Unix compatability is planned for the start of 1984 and the new 16-bit machines should appear later in the year.

At the same time the company has adopted a new aggressive stance with its chip- and board-level products and is aiming for head-on fights in certain markets with established microelectronics specialists such as Motorola and Intel.

The launch of the new 16-bit range will see the development of the existing PDP-11 family going full circle. Last year DEC announced the J11 processor which put the power of the top-end PDP-11/70 on two chips. Last week the company unveiled a board-level processor, the LSI-11/73, including the J11 chips, to a user conference in Zurich.

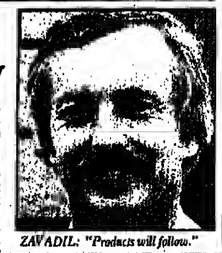
"Products will now follow at the systems level," said European product marketing manager Marc Zavadil. "At present the PDP-11/70 system takes up 18 circuit boards. We now have this single-board computer. But we want to do things properly. It takes at least six months to get a systems product out."

"We are coming to market with a chip and a board-level product because our customers have longer design cycles if they are working from chips."

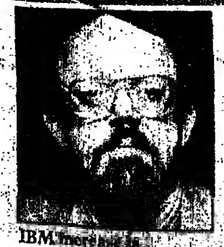
But Zavadil said the J11 chips and boards would open up new markets for DEC. The J11 uses CMOS technology, which needs very little power.

"It will find a niche wherever there is a need for low power consumption, such as in portable equipment," he said. "In such cases customers will prefer the J11 to products from the likes of Intel and Motorola.

"In addition the board product is software compatible with PDP-11 minis, so it could find a place as a controller in distributed data processing networks in place of, say, Intel boards."



ZAVADIL: "Products will follow."



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New Moon rises on Pegasus firm

by Nuala Moran

DEREK MOON, who was in charge of Currys high street micro business, Micro C, until April has just taken on a new job. At the beginning of this month he became chairman of the Brikat group of companies, which includes two computer firms, HB Computers and Pegasus Software.

The relationship between Moon and Pegasus was established when Moon was setting up Currys Micro C chain. He evaluated the Pegasus software for sale in Currys shops. It passed the test and is on sale at Micro C branches.

Moon will be involved in running Pegasus and HB systems. In particular the Pegasus accounting software is to be launched in the US on November 15 and Moon is overseeing the operation. Dealers have been established in Chicago, New York and San Francisco.

Pegasus was established three years ago and the business has gone from nothing to a £1.5 million turnover in the year ended August 1983.

According to the Brikat group managing director Colin Stanley, Pegasus sales in the US "will be like cricket scores in millions. What we've achieved with Pegasus is too good to be true".

Stanley said Moon was chosen to head Pegasus and HB Computers because "he knows his way round the retailing business, and this sort of business is certainly coming down to high street level.

Further UK growth of Pegasus is expected, and there are plans to expand HB Computers under Moon's stewardship.

At the moment the company sells Commodore and Sirius machines, but "we are not committed to anyone," said Stanley, "We will take on the machine likely to be today's winner".

MOON . . . . "Knows his way round the retailing business".

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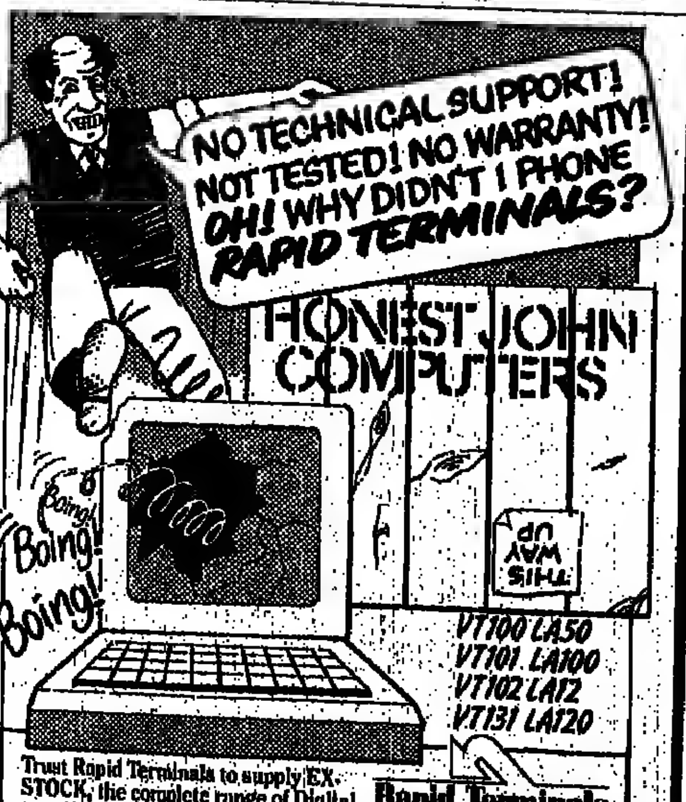

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French to tighten Teletel loopholes

by Jack Gee

THE French government is putting the finishing touches on its plans to close many legal loopholes in the provision of videotex services by Teletel, the Telecommunications Authority's national network.

Until the recent passage through Parliament of a Bill on audio-visual communication, the provision of access to Teletel by service providers lacked any juridical basis.

The Council of State, which fulfils a role similar to Britain's law lords as France's highest court of appeal on points of law, has endorsed the government's decree.

This will require service providers to register requests to open databases accessible through Teletel with the local Commissioner of the Republic. This is the new title of France's traditional Prefects, the senior government official in each département (county).

These requests will then be relayed to the Communications Ministry in Paris where the final decision on authorisation will be taken.

Only newspaper organisations will be allowed to provide classified advertisements over the Teletel network. The Press is being granted this facility in the framework of provision of general and local news bulletins.

Over 290 services are now available on Teletel at Vélizy, a suburb of Paris, where 2,200 private householders have been acting as "guinea pigs" in a French Telecom test since July 1981.

France's National Commission for Computer Technology and Liberty, which is empowered to ban any database it regards as a threat to citizens' civic rights, is about to deliver an official opinion on the new videotex decree.

The Commission has already outlawed a number of computer files on the grounds that information about people's religion, political views and health records was a threat to their civic freedom.

The need for government action on the legal status and obligations of Teletel service providers has become urgent as installation of Minitel terminals in homes and offices progresses apace in France.

The 50,000 terminals at present installed will be doubled to 100,000 by the end of this year and 600,000 will be operating by the end of 1984.

The most important database will be the electronic telephone directory. So far 14,000 Minitels have been installed in Brittany in a pilot venture. But the objective is to hook up all phones in France by 1990 when 30 million subscriber lines are expected to be linked

By the end of this year the electronic phone directory will be available to subscribers in Normandy, Picardy, Marseilles, the Paris "green belt" and part of the capital itself.

Several hundred service databases are now ready or being developed by French government departments, city councils, professional bodies and business firms.

AI set for take-off in US

by Howard Karten

ARTIFICIAL intelligence, long poised – some might even say stalled – on the edge of commercial viability, appears to be starting on a lumbering journey towards greater real world usefulness. That, at least, is the impression given by the third annual meeting of the American Association for Artificial Intelligence, held in Washington DC.

The impression is bolstered by the frank admission of a conference official that the reason for choosing Washington – not known for its reasonably priced hotels or other amenities – was to demonstrate to the federal government that AI has something real to offer and is, therefore, a reasonable investment for federal research grants.

The conference attracted about 2,000 people, mostly graduate students from US and other universities, and many of them with degrees in computer science or artificial intelligence, which are said to be subjects in which it is particularly hard to earn an advanced degree.

Such a high turnout augurs well for the future of AI.

The conference also attracted a dozen exhibitors, including Digital Equipment; General Electric (US) showing a system to diagnose faults in diesel locomotives; Xerox, and other younger firms. The hardware and software attracted many button-pushers, but given the composition of the conference, it must be assumed that the vendors are thinking long term.

Nearly 100 lectures, panels and brief talks were on the schedule. Most were 20-minute talks by students on their research during the past year. Unfortunately, many of the talks were rather arcane and of little immediate practical value.

Stay put, System 34 users told

by Keith Holder

USERS considering a replacement for IBM's System 34 might be better off staying with what they have, at least for the time being, according to a buyers' guide from Xephon which analyses the replacement market.

It also suggests that immediate problems with capacity might be solved by adding another System 34 or using existing equipment as part of a distributed system with, for example, a System 36.

Mike Newman, director of IDS, who contributes an analysis of the IBM System 38, agrees and said there would need to be "some fairly convincing arguments against using IBM".

The guide suggests that the replacement for this area has still not fully developed in terms of hardware. Imminent arrivals such as plug compatible databases and other single-chip intelligent hardware could substantially alter the picture.

Despite these conclusions, the guide's 45-page introduction from Dan Trimmer comes down hard on both the system, which is described as obsolete and marking the end of an era, and IBM itself, arguing that only a nominal weighting should be given by users to considering IBM's own replacement systems.

Fifteen other manufacturers' systems and replacement philosophies are considered, most quite favourably, with the opinion that they offer better price-performance and flexibility.

NEWMAN . . . . "I am surprised at the tone".

Newman commented: "I am surprised at the tone of the normally independent Xephon services. It seems to be thoroughly biased against IBM."

He added: "It does not seem to recognise that over 90,000 customers bought the System 34 and the company is not going to abandon them."

The issue is raised whether users might be better off giving up the search for a large mini in favour of a mainframe, accepting the cost burden for greater flexibility, though Newman regards this as a red herring.

The guide also addresses the question of database, the relational kind being favoured as there is a definite trend towards its use, though here Newman advises that the guide's interpretation of some company databases was open to question.

The remainder of the guide is taken up with the results of a questionnaire sent to the manufacturers who were asked to propose replacement systems covering the £50,000 to £280,000, 0.192 to four Mbyte range; and a series of tables designed to allow quick comparison of data from the questionnaire.

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IBM UK hoists its charges

by Philip Hunter

IBM UK last week announced increases of up to 10% on its rental, maintenance and support charges. Users of the popular 4300 range of mainframes have been hardest hit, while maintenance costs for some of the smaller machines, like the System 34 mini, are unchanged or have decreased.

The increases do not look likely to cause a repeat of last year's storms of protest from IBM users. But the IBM Computer Users Association (CUA), which meets to discuss the price changes on September 13, is unhappy about some of the larger increases, which are about twice the rate of inflation.

"Some of the increases are unjustified," said George Goodwin, systems manager of Wavin Plastics and CUA spokesman. "It will raise in some installations the question of whether the plug compatible alternatives are a good idea."

The CUA will demand an explanation from IBM for some of the larger increases, such as the 9% rise in system engineering costs on all machines, and the 10% increase in the licensed price of some of the software.

There is little hope of IBM reducing the increases, and the CUA will probably have to sit content with the major concessions it won last year. These include an agreement to make only one round of price increases a year instead of two.

GOODWIN . . . "Some of the increases are unjustified."

IBM justifies the scale of the rental increases by pointing to the risk of being landed with unwanted computers before the full purchase price has been reaped. "The risk to us of having unwanted machines returned before they reach the break even point increases during the life cycle of the product," said IBM UK general manager Tony Cleaver.

Pressure has increased on users to buy rather than rent, with purchase prices on many established lines of IBM hardware falling by up to 50% over the last two years. Some users see it as significant that IBM announced its System 36 mini in May 1983 as a purchase only machine, while older, comparable machines could be rented.

Small users who own their machines are happier with the price increases than their larger counterparts. JBS Computer Services, which develops business applications packages on System 34 and System 38 minis, says that IBM machines sometimes work out cheaper than any other – a situation that would have seemed quite unbelievable a few years ago. "But the cost of maintenance is horrific," said JBS managing director Malcolm Jones.

Government to link press offices

by John Kavanagh

THE Prime Minister's press secretary is planning to link government departments' press offices through a computer system, to keep them up to date with government statements and to improve service to the media.

But cynics say the aim is to give Number 10 tighter control over public utterances from Whitehall. This, they say, is in line with Margaret Thatcher's quest for more personal power.

Her press secretary, Bernard Ingham, said this suggestion was "idiotic".

"We want to make sure each department knows what the others are doing," he said. "We are also considering the wider relevance of data processing to what we do."

Ingham said the plan was being examined by specialists in the Cabinet Office. The go-ahead decision should be made this year, but it would depend on the cost.

Whitehall press officers have very little automation. Even Department of Trade and Industry press officers do not have word processors.

Thorn reorganises around technology

by John Kavanagh

A REORGANISATION of the huge UK group, Thorn EMI, has confirmed that electronics and computing products will form one of its two cornerstones for the future.

Last week the company enlarged its information technology division and grouped its communications, electronics and instrumentation firms into a new electronics division.

And it reaffirmed that high technology and home entertainment would now be the keys to its "strategic development". This aim was laid down by the company when Thorn and EMI merged in 1980.

The information technology division was formed last November by combining the bureau, Datasolve, and Software Sciences, both bought from BOC in April last year, plus Thorn EMI Datatech, which makes modems and tape drives.

Software Sciences founder Colin Southgate was made head of the division. Its turnover then was £55 million.

But last week five other operations were added to Southgate's division. They were two fire security firms; microcomputer and electronics components distributor Gothic Crellon; energy and communications firm Thorn EMI Dynatel; a US manufacturer of magnetic stripe bank cards, Thorn EMI Malco; plus the new robotics operation.

The robotics set-up now includes Hazmac (Handling), a UK firm specialising in materials handling. The company is being taken over by Thorn EMI in a £730,000 deal. It will become the centre for the group's robotics activities. These include the distribution of robots from Japan's biggest robotics manufacturer, Yaskawa Electric.

At present high technology and engineering account for less than a quarter of Thorn EMI's turnover.

The company said last week: "There is no doubt that high technology will become more important to the group. Technology goes right across the business market and the home entertainment sector, especially with the advent of cable."

SOUTHGATE . . . Head of information technology.

Europe's big three agree on Bavarian research centre

by John Riley

ICL, Siemens and the Compagnie des Machines Bull last week ended months of speculation by signing an agreement in principle to set up a research institute in southern Bavaria.

By the end of 1985 the companies expect to have 50 research staff conducting fundamental research into expert-systems and development of techniques of knowledge engineering. The companies have agreed that the results of research at the institute will be freely available to all three companies.

A spokesman for ICL said that he expected ICL would transfer staff initially from West Gorton and Stevenage. Soundings among staff there indicated that there would be no problem enticing people out to Germany.

Both Philips and Olivetti have been left out in the cold – they were not invited to participate.

None of the companies is saying how much cash they intend to put into the institute, but reports suggest that it will initially be on a modest scale – in the region of £1 million over two years.

The precise location for the institute in Bavaria has not been decided.

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SCHLEE . . . "We think it's still got plenty of life."

Root's Unix push

by Nuala Moran

THE Unix software company, Root Computers, has launched an LSI-11/23 compatible board, which it hopes will become a vehicle for selling more of its software.

The board, IS-68K, sits on the LSI-11 Q bus. It is designed and manufactured by Integrated Solutions Inc, of California, around a Motorola 68000 processor.

Accnrding to Robin Schlee, Root's marketing director, "The IS-68K has a lot packed on to one board.

"It has 256 Kbytes of memory and it is a whole CPU on a very small board, so it will lend itself to the coming trend of making computers smaller and smaller."

The board was designed specifically for Unix, although Schlee said there was nothing to stop other operating systems being run on it.

The Unix implementation for the IS-68K is Uniplus from Unisoft, the Americao company which Root represents in the UK. Root hopes the board will stimulate the Unix market.

Compatibility with the Q bus will be an important selling point, because there is a large oumber of compatible peripherals on the market. Schlee admitted that the LSI-11 is slighdy old technology, but said: "It is standard and well proven. It might he old, but we think it's still got plenty of life."

Darkcrest, the DEC systems house, will distribute and support the IS-68K. Roger Box, Darkcrest's technieal director, said that the company was going to release a range of products based around the board.

Darkcrest will also supply some technical support.

Box said: "I think the selling will work hoth ways, with Root and Darkcrest getting business fnr each other."

Although the major distribution role will be satisfied by Darkcrest, there are a number of software bouses toterested in using it to huild their own systems.

The board costs £2,995 and fully supported multiuser Unix costs a further £1,500.

Root will sbortly be adding word processing and accounting packages to its range of languages and applications software.

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NOMINATIONS now are being accepted for two major awards for the UK computer industry. Awards for "Systems Innovation of the Year", to be sponsored jointly by the National Computing Centre and *Computer Weekly*, and "Newcomer of the Year", sponsored independently by *Computer Weekly*, will be given under the Recognition of Information Technology Achievement scheme (Rita).

Nominations in each category will be presented to a distinguished panel of judges, with the winners being announced at the Rita awards dinner in Birmingham on January 17, 1984.

The ground rules for nominations are simple. Select your choice for "Newcomer of the Year", or "Systems Innovation of the Year", or both, and complete the form below. A separate entry should be made for nomioations in each category.

The award to "Newcomer of the Year" will go to that start-up computer company which the judges think best exemplifies how the UK can remain a force in information technology markets.

The company will have been in business less than two years as of the time of close of nominations on September 30, 1983. Judging criteria will be relatively open-ended, but can include: financial performance (where available), market penetratioo, employment opportunides, innovation, and initiative and imagination.

The company must be of UK origin, and should he involved in the provision of hardware, software, or services to the information technology market.

"Systems innovation of the Year" will be awarded to that complete system, component, peripheral or part of a system which is judged to be the most outstanding example of achievement in the field of information technology in the UK during 1983.

The equipment or systems must be available in the UK during 1983; and the innovative element in the system must be wholly or predominantly of UK origin. Software alone and word processing or office systems orc precluded as these are covered by other Rita awards.

Companies or individuals cannot nominate themselves. Members of the staffs of *Computer Weekly*, the National Computing Centre, and Clapp & Poliak may not enrer.

In each award category, a case of wine will be awarded to the person who first nominates the ultimate winner. In addition, the first person in each iostance who nominates ooe of the two runners-up will also receive a case of wine.

Nominations should include a short statement explaining why the company or Individual should be judged tbe "Systems Innovation of the Year" or "Newcomer of the Year". Nominations must he received by *Computer Weekly* before or on Friday, September 30, 1983.

Judges for the Rita awards 1983 are: Doug Eyeions, director general, Computing Services Association; David Firnberg, deputy president, British Computer Society; David Fairbairo, director, National Computing Centre; Ted Cluff, secretary general, Institute of Data Processing Management; and Dr Paul Freeman, director, Central Computing and Telecommunications Agency.

There are six othcr Rita awards in addition to those sponsored by *Computer Weekly* and the NCC: Software Product of the Year; Office System of the Year; Supplier of the Year; User of the Year; Personality of the Year; and Best User's Traiuing Method of the Year.

RITA AWARD — Recognition of Information Technology Achievement

Return this form, to arrive by first post September 30, 1983, to: Linda Allen (Rita Awards), Computer Weekly, Room L218, Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS.

I wish to make a nomination for the Newcomer of the Year/Systems Innovation of the Year award. *(Please delete where appropriate. If you wish to nominate in both categories, please photocopy this form.)*

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Company _____

Company Address _____

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Company Address (full postal address if possible) _____

_____

I attach a short statement explaining why my nomination should win.

Signed _____ Date _____

SALES BRIEF

Agriculture council's £3m for DEC

DIGITAL EQUIPMENT has won a £3 million order from the Agricultural Research Council for a central system based on the Vax series. The system will be installed at the council's new computing headquarters in Harpenden to link 30 research institutes throughout the UK which until now have used isolated minis and mieros.

The order has come at a good time for the company, helping to revive flagging corporate morale after the recently announced slump in profits following 10 years of continuous increase.

Geac goes Dutch

GEAC COMPUTERS, the Canadian specialist in computer systems for libraries, has celebrated the opening of its European office in Amsterdam with a big order for a public library system from a Dutch compaoy. Geac has a wholly owned UK subsidiary which has sold library systems to the British Leoding Library and many public libraries.

Students' boost

US ELECTRONICS group Harris contioues its UK revival of sales with a £175,000 order from Slough College. The company will supply an H800 computer to work beside an existing H500 installed three years ago, to enable an extra 54 students to study for the Highet National Diplomas in computer studies and computer technology.

Council contract

MICRODATA Information Systems has added to its tally of over 100 minicomputer installations for UK local authorities with a £190,000 order from Anglesey. The order specifies the Reality system with eight terminals, five printers, 256 Kbytes memory and 125 Mbytes disc storage.

$15m agreement

MICRO Peripherals nf the US has taken $15 million of orders under a five-year contract with Burroughs. The agreement specifies three models of double density disc drive: the 250 Kbyte Model 51 single-sided drive, Model 52 for 500 Kbyte double-sided storage, and the Model 92 ooe Mbyte double-sided version.

Bank order

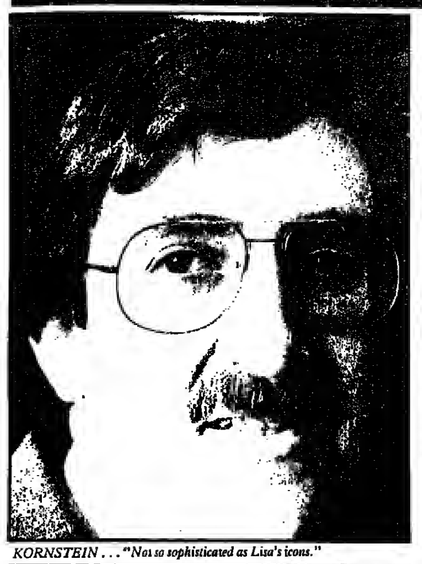
RACAL MILGO is to modernise the Bank of Ireland's data processing facilities. The system will be installed in phases at the bank's Dublin headquarters with access to a DEC Vax 11/750 machine.

Bureau replaced

DATA GENERAL has installed an Eclipse MV 8000 mini to replace a bureau service at Walsall-based Crabtree Electrical Industries, which makes electrical circuit accessories. The computer will be used to host a large manufacturing control system.

Dual system

TOP UK air freight agent Jardine of Feltham, part of the Far East trading group Jardine Matheson, unveils the first phase of a £1 million ICL dual 2957 system next month. It includes £99,000 worth of real time accounting programs from Northern Software Consultants.



KORNSTEIN . . . "Not so sophisticated as Lisa's icons."

Digital presents its common VIP

by Claire Gooding

THE wraps came off Digital Research's VIP last week, when the company famous for CP/M promised to bring computing to the masses.

VIP, as predicted in *Computer Weekly*, is a cheap user-interface, which aims to spread one common command structure across as many hardware and software environments as possible.

The strategy centres on the learning language DR Logo, used with personal CP/M and the VIP control software, which displays several functions on screen. The products will be bundled with applications, and the low cost – predicted at around £10 a copy – passed on to end-users.

"We use ideas frum Xerox's Star, along the lines of Lisa's 'icons' but not so sophisticated," said Howard Kornstein, European director for technical support.

"VIP uses pictorial metophors and animation which is matched to the capabilities of its target systems, and here we're talking about 50Kbyte systems with the minimum of disc space – not 500Kbyte systems in the upper range," he explained.

Digital Research stresses that VIP's aims are very different from those of Lisa. "Such systems are not only expensive but very restricted: Lisa is far from being a portable environment," said director of Europeon operations Paul Bailey.

"The whole idea of VIP is to be an open system, which can integrate many applications under one structure. It should open up computing to o whole section of people who thought that computers were too difficult for them to use."

VIP is aimed at the ever-growing personal business sector. Its typical user is seen by the company as "the newsagent whose kids play games on the machine at weekends, but who wants to get a return on his investment by using the thing to run his business on Monday."

In action VIP is more of a split-screen facility than a true window system, using fairly rudimentary graphics which depict filing cabinets, drawers, folders in the drawers, and finally, pieces of paper.

Though not stunning graphically, the limitations are deliberate, as the simpler the system, the easier it is to port across various machines.

To show that it is serious about the mass market, Digital Research has set up a new consumer products division, headed by Kenneth Harkness, former president of Atari's Arcade division.

VIP's efforts to become the lowest common denominator nf personal computing depend largely on its portability. It sits on top of the Personal CP/M operating system, designed to be put on ROM, and bundled into cheap applications products.

Newbury creates jobs in Staines

by John Riley

MAJOR UK peripheral manufacturer Newbury Data Recording is to recruit 130 assembly staff this month for its new printer factory in Staines.

The factory will manufacture Newbury's new 8850 twin nine needle headed 480 characters per second dot matrix printer, which was launched recently and which already has a fat overseas order book.

"We will be working at full stretch over the next two to three months assimilating them all," said John Pether, Newbury's international marketing manager. Accnrding to Pether, the company is on track for a turnover this year of £42 million, of which about 40% is exports mainly to France and Germany, via its subsidiary, Data Recording Instruments.

The company currently ...ploys about 750 staff and is "currently enjoying a growth rate of 50% a year". Ahout a quarter of its production is disc drives; VDUs, which are made in Newbury, account for about 16% of production and printers about 32%.

Tops students prosper

by George Black

THE Manpower Services Commission (MSC) wants to bring computers into its oew youth training scheme, according to chairman David Young.

"I won't be content until we're using this technology for the scheme," said Young at an open day for Datasolve's Project Author, an MSC-backed plan for producing writers of computer-based training programs.

He stressed the benefits it could bring to the unemployed in rural areas who have so far been least able to benefit from government help.

Thorn-EMI personnel director John Richards said computer-based training had a vital contribution to make in reducing the level of young people out of work, which was "the biggest blot on our society".

Project Author's first 12 graduates look like being snapped up by industry in November. They are the oldest and most highly-qualified Tops trainees in the country: aged 25-45 they include two MAs and a PhD, yet they were mostly out of work before the six-month course.

The graduatea will he the most expensively trained at over £10,000 each. Most had previoua teaching experience, but no computer knowledge.

"Computer people don't make good authors, they're too blinkered," said one studeot, Frank Jones. He has been working on a problem submitted to the organisers by the London Borough of Ealing on how to train clerical staff to deal with general public inquiries by using a terminal.

The first 12 graduates, who were chosen from over 400 applicants, will not have to shop around for a job like most Tops trainees as the course is almost the only source of authors.

YOUNG . . . Stressed benefits.

Praise for generators

by George Black

SOFTWARE applications generators get a cautious endorsement in a new official report from the Treasury's Central Computer and Telecommuoications Agecy (CCTA).

The report, by consultancy DMW'a Ed Dee, confirms that generators "can achieve very significant savings in program development and maintenance time and cost".

But it warns that users had referred to poor performance in a production environment, the difficulties of creating complex repofts and of choosing the right type of tool for the job. Some had ordered file maintenance packages when they wanted full applications generators.

Reactions from users were almost without exception favourable, according to Dee. Getting the right database management system was just as important as a generator when there was a significant data handling content, he added.

Dee's survey does not recommend or reject any specific products, but discusses in detail various features of 22 software systems available.

They ioclude IBM's ADF, CMC's ALL, Information Builders' Focus, Burroughs' Linc, Cincom's Mantis and Adabas's Natural.

The comments suggest – predictably enough – that documeotation is the area of most general weakness. For instance the remark attached to Cullinet's ADS-Online – "reasonable for skilled readers" – is paraphrased for a number of other products.

And the widespread claims that generators can he oeed by staff with no computing expertise are not endorsed here. Delta, for example, is described as "not an application generator – a programmer's tool only, but a good productivity tool".

Focus is said to be "mainly a reporting and an enquiry facility – but powerful enough to write general purpose applications". On ADR's Ideal, Dee again picks his words of praise with care: "appears to be a very well designed product from the point of view of obtaining good productivity from professional programmers".

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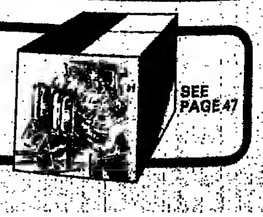

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Games help maths standards

by Caroline Burgess

COMPUTER games are helping to raise the standard of mathematics learnt in schools. Enthusiasm for the games is leading children to enjoy the subject.

These are two of the observations made in a discussion paper released this month by the Department of Education and Science. The paper is the result of a 12-month survey on the impact of the microcomputer on the teaching of mathematics.

The enthusiasm of the schoolchildren, shown by their arriving at school before it opens and having to be told to leave by caretakers at the end of the day, is not limited to any particular age group. But it is greater among boys than girls.

The paper urges schools to build on this willingness to work and bridge the gap between games and the more formal parts of mathematics teaching. It says games provide a strong initial motivation, which can bring about a combination of competition and collaboration between pupils and provide a route to more academic activities.

DAVISON . . . *Responsible for retail strategy worldwide.*

ICL opens retail business centre

by John Riley

ICL launched a fresh offensive into vertical markets when it opened its Retail Business Centre at Bracknell last week.

The new strategy involves concentrating all personnel connected with a defined market into one location — the first being this new centre to specialise in the retail trade.

The Retail Business Centre, set up in a new building at a cost of £5½ million, houses over 200 marketing, development, software and support personnel in one new division. It is headed by John Davison, who is responsible for ICL's retail business strategy and products worldwide. Previously his 200 staff were spread out in six divisions in nine locations.

"We are bringing all the people concerned with the retail trade together, so we are now rowing the boat in the same way," said Chris French, director of ICL's Distributed Systems Development Division, to whom Davison reports.

French added that the Retail Business Centre was a "prototype".

"Signs have been positive so the next unit should be set up in about two to three months' time — we are working on other units," he said, although he would give no further details.

Retailing was chosen first because ICL has, according to French, a "long tradition of servicing the retail industry, with £350 million installed sales worldwide". He expects a further £100 million to come from that sector this year.

ICL also launched two point-of-sale terminals, which can be programmed in CIS Cobol, and software to link them into DRS in-store processors. All are available now.

"The unusual step of using Cobol gives more independence to the users," said Davison. In the pipeline are a point-of-sale scanner for supermarket checkouts, and four pilot electronics funds transfer systems to be tested in 1984.

Referring to electronic funds transfer, Davison said: "There are some issues to be resolved, ranging from response times in the network through to customer and retailer acceptability — which to date has not been universally good."

The third piece of hardware launched last week for the retail industry was an intelligent standalone workstation, the Optical Selection Terminal (OST). It is designed for the retail trade with 255 pressure sensitive key points on keyboard for entering items for stock ordering, tele-sales and ordering, and other applications.

The OST, which has an entry price of £3,500-£7,000, is water resistant, "so if it is used in pubs, for example, beer and bread won't clog up the machine", said Bill Hawley, marketing manager for the Retail Business Centre, who was until August 1 director of retail systems in the UK for NCR.

ICL is aiming for the large company accounts with its retail systems rather than the smaller retail businesses.

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Report shakes up US

by Caroline Burgess

NEXT to a nuclear explosion the biggest threat to computer systems in the US comes from earthquakes.

This is one conclusion of a report* into possible threats to the American computer society.

"Natural catastrophes are generally localised — at worst regional in extent. They may damage computer systems and temporarily interrupt services, but planned recovery can be rapid," says the report.

However, the large concentration of computer users and manufacturers in Silicon Valley south of San Francisco are located between the two major earthquake fault lines on the West coast.

"The economic impact of an earthquake to a company, the State and even the nation could be substantial", is the opinion of one engineer from a California Institute of Technology.

*Resiliency of the US Information Society. Turn, Navolay, Geraghty Sibley and Ware. Published by AFIPS Publications.

Voras, the new computer-based map display system.

Adjusting maps on the video

by Nuala Moran

MILITARY strategists can throw away the maps and pins. Marconi has just released a system that generates a map display which can be overlaid with information on the current situation on manpower, vehicles and stores.

The system is called Voras, which stands for video overlay resources availability. It is based on a combination of a micro and a video, with software developed by Marconi. It produces a detailed map background in full colour, with computer generated graphics overlaying it.

According to Marconi, although other systems can produce this type of display Voras costs one-third the price of other systems. And the company claims its system is much more flexible than others.

Output can be displayed to more than one user at a time, or can be used to drive a video projector for large screen display.

Functions and command can be selected via a remote keyboard, and there is a joystick controlled cursor to manipulate the overlaid graphics. The scale of the map display can be altered, and photographic material or computer generated imagery can be retrieved and displayed.

Civilian as well as military applications are foreseen for the system. It was on show recently at Ambex '83, the ambulance authorities exhibition.

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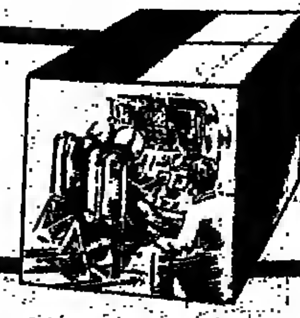

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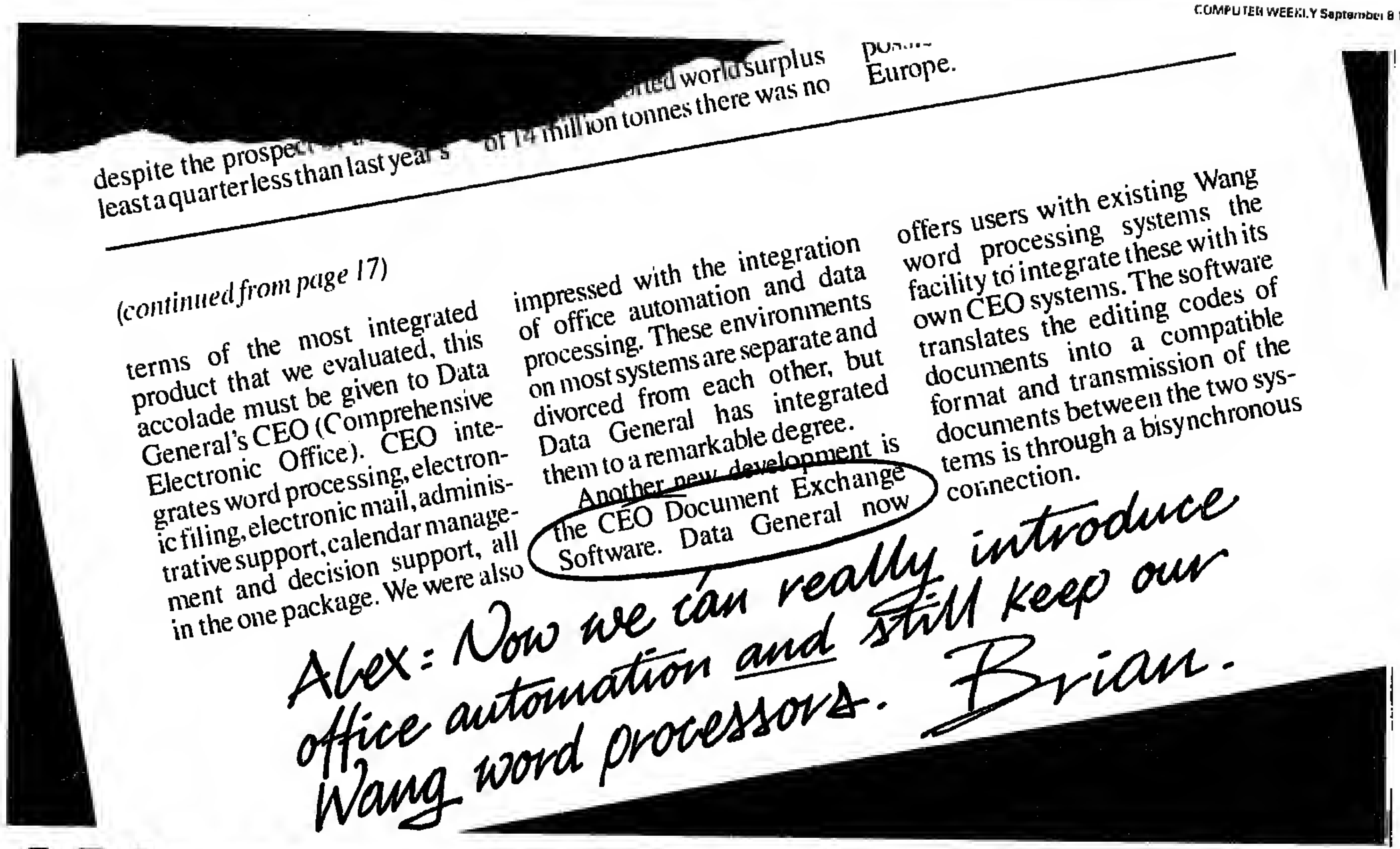

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COMPUTERS

CARPENTIER . . . Wants ideas for his 10-year project.

European Commission puts out call for computer ideas

Good hopes for Esprit contracts

by John Riley

THE European Commission wants some ideas. It has put out a call for them from European data processing companies as it finalises the work plan for its 10-year, £937 million Esprit project. The project is well on track for gaining approval and cash by December, despite the EEC's financial crisis, it was learnt last week.

Michael Carpentier, director general of the Commission's IT task force, and boss of the Esprit programme, aims to put out a call for contracts at the end of 1983 or early 1984 and has organised workshop meetings in Brussels in October and November to discuss plans with companies in detail.

"We envisage a two-phase approach," he said. "During the first phase we are inviting written contributions to help us arrive at a comprehensive and coherent set of objectives for discussion in the workshop meetings."

Separate three-day workshops have been arranged on microelectronics; software technology; advanced information processing; office systems and computer aided manufacturing.

A major problem for long-term Euro-proposals such as Esprit is that the Euro-budget works only on an annual basis, the year's allocation being decided in the preceding December. The Esprit project has been earmarked about £28 million for 1984 in the draft budget, which will be debated next week.

A spokesman for the European Parliament said last week that, despite the financial crisis the European Commission is facing, the Esprit budget should not be affected. "There is a squeeze on right up to our spending limit and we might have to grab money from elsewhere to pay for the farm expenditure, but the Esprit money is a small sum and should go ahead," he said.

Since its announcement last June, the Commission's proposal for the Esprit project has been studied by the Energy Committee of the European Parliament. A draft report has been drawn up for debate and is expected to be adopted by the committee at the end of September.

The full proposal, with amendments, is likely to go before the European Parliament in November, and to be passed by the Council in early December.

Quorum's LAN now available in the UK

by Caroline Burgess

QUORUM Computers has launched its latest product Q-Lan, a micro network, in the UK. Based on Quorum's own LAN (QuorumNet) it will support up to 64 workstations over a distance of 1km, while offering each user CP/M operation and access to 340Mbyte storage.

"The standalone era is finished in small businesses. Now people realise the benefits of micros they want more," said Martin Willard, marketing director of Quorum. "Minis and mainframes are too expensive for small and medium-sized businesses."

"Q-Lan is not a totally new product: it is based on technology developed in 1980, and has been tested in Europe since April," said Alan Brown, Quorum's managing director.

An 8-bit dual processor provides 128 Kbytes of memory at each workstation. One processor is used to run CP/M; the other gives network and local cache memory facilities, leaving 60K for running CP/M. A coaxial cable links the processors in the mass storage unit.

A Q-Lan system giving three terminals costs about £12,500 to install. To expand the system costs about £4,000 per workstation. So far, only four have been sold.

Quorum plans to introduce a 16-bit processor by the end of the year. "We are aiming at the second-time user and the medium-sized company wishing to step up from standalone," said Brown.

However, QuorumNet does not allow any type of microcomputer to be attached to it. "We don't want that," commented Brown. "When you start mixing systems is when you get problems. We would advise people to change their micros."

BROWN . . . "Don't mix – change!"

Quorum plans to sell its products through distributors and OEM dealers expect to announce two deals shortly – one with a large distributor; the other with a microcomputer manufacturer.

Established in 1979 as Q1 Europe the company was bought out by its management earlier this year. In 1980/81 it was losing about £2 million a year. But it hopes to break even by 1984.

In 1981 Quorum made half its staff redundant and dropped out of developing application software and after-sales service in an effort to become profitable. It now has a staff of 40 and a turnover of £1.4 million a year.

Disaster service for Vax users

by Philip Hunter

THE UK's first disaster recovery service for users of Digital Equipment's Vax minicomputers is available in London and the Home Counties from Steiger Software. It will operate in a similar way to services for IBM mainframe users: customers will be offered guaranteed access to a Vax computer when their own fails.

Steiger has installed two Vax 11/780 systems, top of the range models, at a cost of £5 million. One of the computers will be for the disaster-recovery service; the other for in-house software development.

Up to 20 customers will be able to use the service, each having a guaranteed slice of the computer's time. The service will also include keeping and regularly updating duplicate copies of the customer's database.

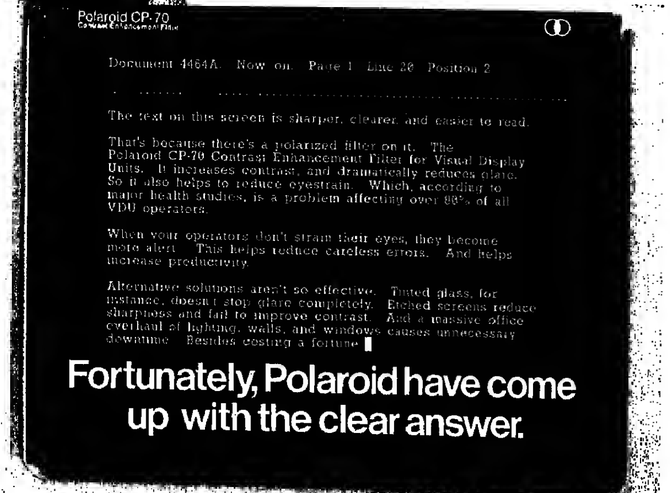
The customer will pay between £10,000 and £50,000 a year for the service.

BR seeks an IT supremo

BRITISH Rail wants a computer supremo to co-ordinate its computers, telecommunications and microelectronic equipment.

Last week it placed an internal advertisement for the newly created post of Director of Information Technology. A British Rail spokesman said: "We have computers spread throughout the organisation . . . the new director will be concerned with computer applications for specific purposes."

VDU operators have a glaring problem.



Fortunately, Polaroid have come up with the clear answer.

Each year the number of people using Visual Display Units increases.

And, each year, so do the problems which VDU glare causes. Studies have shown that over 80% of operators suffer from eyestrain, which, in turn, leads to tiredness, careless errors and lower productivity. It also increases absenteeism.

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NEWCOMERS

Watch out for big Brother in 1984

Brother Inc is aiming to become a major force in microcomputers and in printers . . . Kevin Cahill reports

HANOVER FAIR next year will see the international debut of Japan's newest entrant to the information technology stakes.

The company is Brother Inc, traditionally one of the world's major suppliers of sewing machines, home organs and pianos. In the UK it is best known for its typewriters.

In the spring of 1984 the world will see the fruits of five years of slow and careful change at Brother, which is aimed at making the company a major force at the micro end of the business and in computer printers.

The Hanover Fair announcement is still a closely guarded secret, but it will be an advanced, ultra-light weight micro, with substantial software and communications facilities. The local speculation in Japan is that the device will be a 16-bit machine, with an RS 232 interface, some kind of fairly substantial on-board solid state memory and up to 256K of RAM.

The emphasis in Japan is on the portability of the device.

For the past two years, Brother has been extensively involved in marketing a range of daisywheel printers – machines which, from a standing start last autumn, are now selling at the rate of 500 a month in the UK, according to Jim Cattini, the Brother UK marketing director.

But before looking in detail at what Brother is offering here, it is worth pursuing the speculation in Japan.

One of the machines which Cattini has been selling successfully for Brother is described by the company as a personal electronic printer. Basically it looks like a very small, portable typewriter – which is really what it is.

The first of these machines hit the UK last year and was a runaway success, selling for anything between £115 and £150.

That first, so-called electronic printer, advanced though it appeared, when compared with its successor was a very limited device, though reflective of one of Brother's main product lines – typewriters.

It contained a total of three small microprucessors, which drove a dot matrix printer, working at 17 chps, n aophisticsted keyboard with three shifts on it, giving the user access to all common European characters including Greek, Aramaic and Russian, as well as the common upper snd lower case options.

CATTINI . . . "Last month we sold more than in the whole of last year."

In addition, the EP20, as that first model was called, had a 16 character screen, which held tbe 16 last characters typed, allowing s user to insert, delete and amend prior to executing the print.

Apart from other standsrd typewriter facilities like the tab set and clear, the EP20 came with s full printsble calculation facility.

The little printer, almost silent in operation and ideal for use on trains snd aeroplanes, wnrked either vis a 20,000 character carbon ribbon or directly on to thermally sensitive paper supplied by Brother.

The printer takes ordinary typing paper, but the quality of print is sensitive to the quality of the paper, and for best results shiny paper is recommended.

The print bead and rollers were at first too fine to allow for copies, though that is a problem which has now been remedied.

For all but the most naive, the writing was on the wall – especislly upon inspection of the motherboard, which took mainstream componentry as upposed to the components themselves, tu new levels of compactness. Here, surely, is the predeccssor of a true portable computer.

The Brother engineers at Ngoya City, south of Tokyo, certainly thought so because, with no increase in weight or power consumption, the EP22, retailing for around £200, took the whole process one stage further.

The EP22 is physically similar to the EP20, except for a glamorous black finisb to the bodywurk.

It still weighs just fuur pounds and runs for anything up to 14½ bours of continuous operation uff the same four 1½ volt batteries.

But the machine is now much closer to its eventual destiny os a portable micro. There is now 2K of RAM aboard, as well as a 232 interfsce and 32K of ROM. The 2K of RAM will hold more than a page of A4, allowing pages to be copied by being re-run, and allowing the same page to be transmitted either to another micro or another printer.

The second major innovation on the EP22, although bound by the 16-character screen, is that there is now an effective "fourth shift" on the keyboard, giving access to a wide range of word processing facilities.

The only problem facing tbe Brother engineers at this point is the screen and the memory.

The tiny motherboard is crowded already with three microprocessors, but there are solutions around the corner. Brother is known to be experimenting with both bubble and other solid state memories.

Two options are open for the engineers: one is to embed the screen in the lid of the device, as Grid has done with its Compass machine in the US. The other is to lengthen slightly the machine and fit a narrow flat screen in place of the existing 16 character screen.

"The biggest advantage over all other machines," according to one Dutch user, "is the full A4 printer at the top."

The EP22, the same as its predecessors and in line with the likely micro successor, has the same 9in thermal dot printer at the top of the machine. This enables a permanent, full sized record to be taken of any transmitted copy.

While the EP20 series is the focus of interest to personal computer buffs, the mainstream of Brother's thrust into the information technology market is being developed behind two of the company's main daisywheel printers, the HR1 and the HR15.

Brother began selling the range in the UK last August and Cattini proudly notes that last month, normally a quiet period, the company sold more machines than in the whole of last year.

Growth so far this year is at a rate of 227% per annum and Cattini says he is planning to double that in next year's budget.

Most of the selling has been done via a fairly small but rapidly expanding chain of dealers so far, but the big deals are beginning to appear.

In France Cii-Honeywell Bull uses Brother mechanisms in its machines, but it is in the US, where Brother is pitted against arch rival NEC, that the real battle is being fought. Brother is believed to be in detailed negotiations with most of the major US manufacturers, including DEC, Wang, Prime and even, it is rumoured, IBM.

The HR15 is a letter quality daisywheel printer with RS 232 and Centronic interface and a print speed of 13 characters per second. It is driven by software which took 10,000 man hours to prepare and, as well as the usual micro, has 32K of ROM on board, up to 4K of which can be used by Brother engineers in the UK to modify and amend the machine.

The printer comes with the usual options of a fornfeed and tractor feeder for data processing runs, but in addition the HR 15 has a fully qwerty keyboard which converts the printer directly into a typewriter, with memory and other facilities, and all for a recommended price of £500. (The keyboard is about £150 extra.)

When it comes to speed claims, Cattini gets a little exasperated: "We use Shannon text, a strenuous test of wheel selection as well as carriage motion and line spacing. We just wish everyone else did as well."

The story Cattini recounts to point up an abuse is about one of the company's own dealers in the US which advertised the HR 1 as 200 cps in "white space mode."

"White space mode," Cattini notes, "means paper movement only."

While statistics are hard to come by in the UK, in the US market research group Dataquest has done a study which shows that at the micro store level printers account for 20% of all sales.

According to the Dataquest survey, the most frequently mentioned letter quality printer was NEC's, but after only a year's marketing in the US Brother's had become the sixth most frequently mentioned printer, with over 20% of all would-be purchasers enquiring about the machine.

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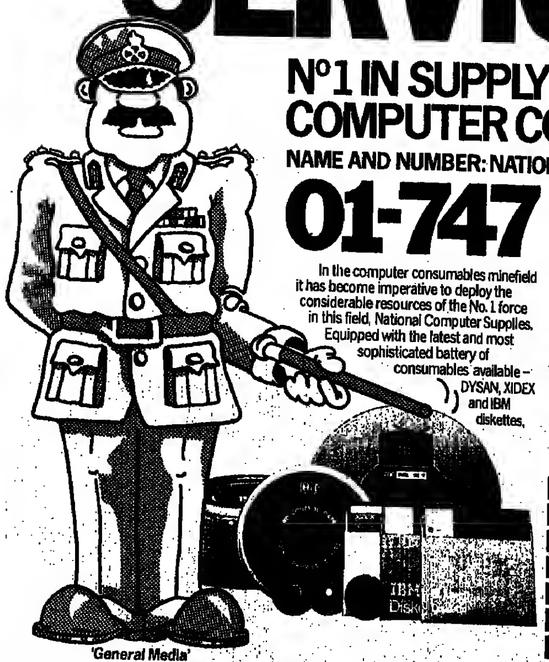

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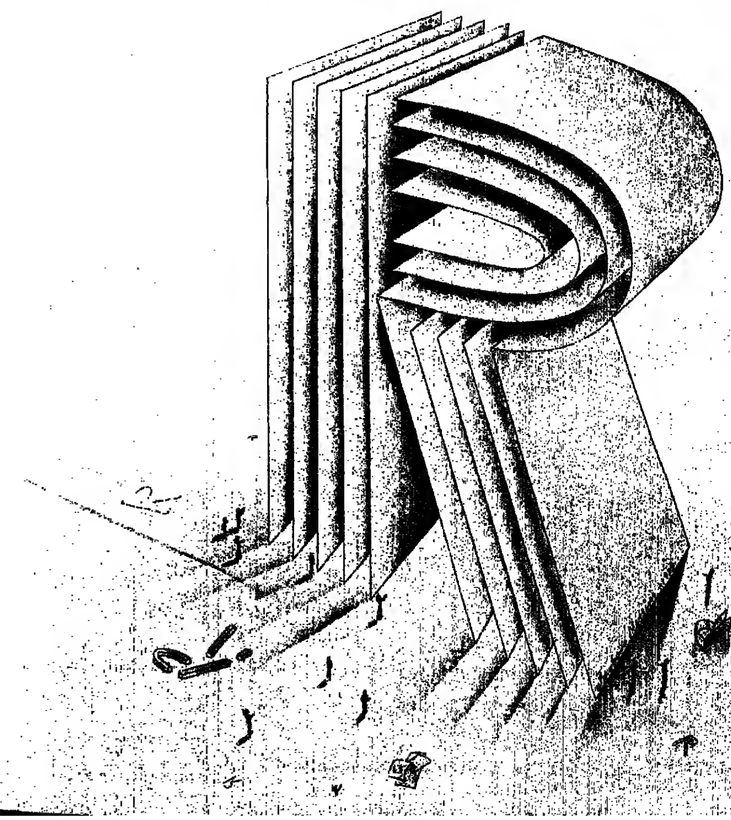

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Price-cut brings Pascal to masses

by Claire Gooding

THE price tag on Oregon Software's implementation of Pascal is to be cut as part of its push into the 68000 Unix market. Oregon's Pascal II already has a wide following, as it was adopted by DEC for its kit, but with the arrival of cheaper 68000 machines – down from about £3,000 to £1,000 or less – Pascal II is heading for the mass market.

"One of the problems with the 68000 is that there is no software for it," said Philip Ingham, marketing director of Unit-C, the company selling Pascal in the UK.

"Unix is the coming world, now that there are machines large enough to run it without being brought to their knees. Since the OEMs supply the boxes without the software it's up to us to surround them with the right software tools.

Micro predictions split

TWO front-runners of database design are taking very different views of the future of micros.

Mathematica, owner of the Ramis-11 English-like database manager, is counting on Motorola's 68000 chip for its long-term development and is preparing a version to run under the Unix operating system on that processor.

But its main rival, Information Builders, is betting that the Intel-based IBM-PC will be dominant for a long while, and is therefore concentrating on pushing tbe new PC version of Focus.

Mathematica's UK sales manager, Andy Wilder, said he believed the 68K chip was "where it's at" and it was this market it would be principally addressing. He would not say if the company had any plan to attack the PC territory.

However, Information Builders' British managing director, Peter Scawen, said it had already made nearly 600 PC-Focus solea worldwide and that clients were now talking of ordering it "in hundreds of copies".

The two organisatioos have been developing side by side in the IBM mainframe software market since Gerry Cohen left Mathematica to found Information Builders in 1975.

Mathematica turned over $36 million last year, but its offshoot seems to be gaining ground and achieved $20 million.

Both have strong user bases among multinationals and public services, most of which evaluate both offerings before a purchase.

Yet 90% of sales, said Scawen, were still to coocerns with no previous investment in what IBM calls the informatioo centre. Even the largest companies, which have had systems handling volume transactions for junior managers, have been slow to see the importance of decision support for their bosses. For these they have used the bureaux – like Tymshare, Scawen's former employer.

Now the top Times-listed firms have to consider a third option, Nomad from CSS, released from its bureau form and packaged. And late next year IBM itself will weigh in with DB-2 threateoing all the smaller vendors.

Mathematica was taken over by Martin Marietta in June, having turoed in a third-quarter loss in the wake of heavy discounting. Now it has access to huge funda for research and a siater in Hoskyos to undertake joint projecta.

CSS's parent is Dun and Bradatreet, which meana it has a caah pile at its elbow.

SCAWEN . . . Nearly 600 PC-Focus sales worldwide.

Software File is compiled by George Black

Architect beefs up computer operation

by Claire Gooding

THE Ove Arup partnership, the architect responsible for some of the world's most unusual buildings, is beefing up its computer operations.

The move to strengthen its computing arm, Oasys, set up in 1979, comes after a review which indicated the firm was missing out on a potentially huge market for its software packages. Oasys will now sell the architectural and draughting packages developed at Ove Arup through agents.

"It's difficult for a professional company to operate in such markets, because of the limitation imposed by professional bodies," explained Ove Arup's technical co-ordinator, Dr Michael Prince. "Employing agents to do the marketing on our behalf was one way of maximising the benefit from our software. These applications are well-proven and in demand throughout the industry."

Oasys has appointed agents in Liverpool, Loughborough, Croydon and Wimbledon, the latter being Integer Software, a software house set up by ex-Arup staff expressly to deal with architectural packages.

Integer will sell Arup's Hewlett-Packard based packages, while the Cadraw aystem, based on ICL's Perq kit, goes to Maxicomp. The structural engineering software is split between two firms, Strucom for DEC users and GECS of Liverpool for Data General kit.

TI has Cobol program generator

US HARDWARE maker Texas Instruments has a new Cobol program generator, derived from System 80, written by Phoenix Systems of Pittsburgh, Pennsylvania. TI claims users do not need to know Cobol as it communicates in English. Its output runs under several operating systems, including CP/M-86 and MS-DOS.

Secure in Japan

UK BANKING expert Arbat has got a toehold in the Japanese market with the installation of a DEC PDP-11/44 system for securities firm Nomura in its Hoog Kong office. Arbat, which has beeo marketing its Series 700 software from Hong Kong and Singapore, now has the advantage of the offices of its new parent, CDC, in Japan.

Lex supply

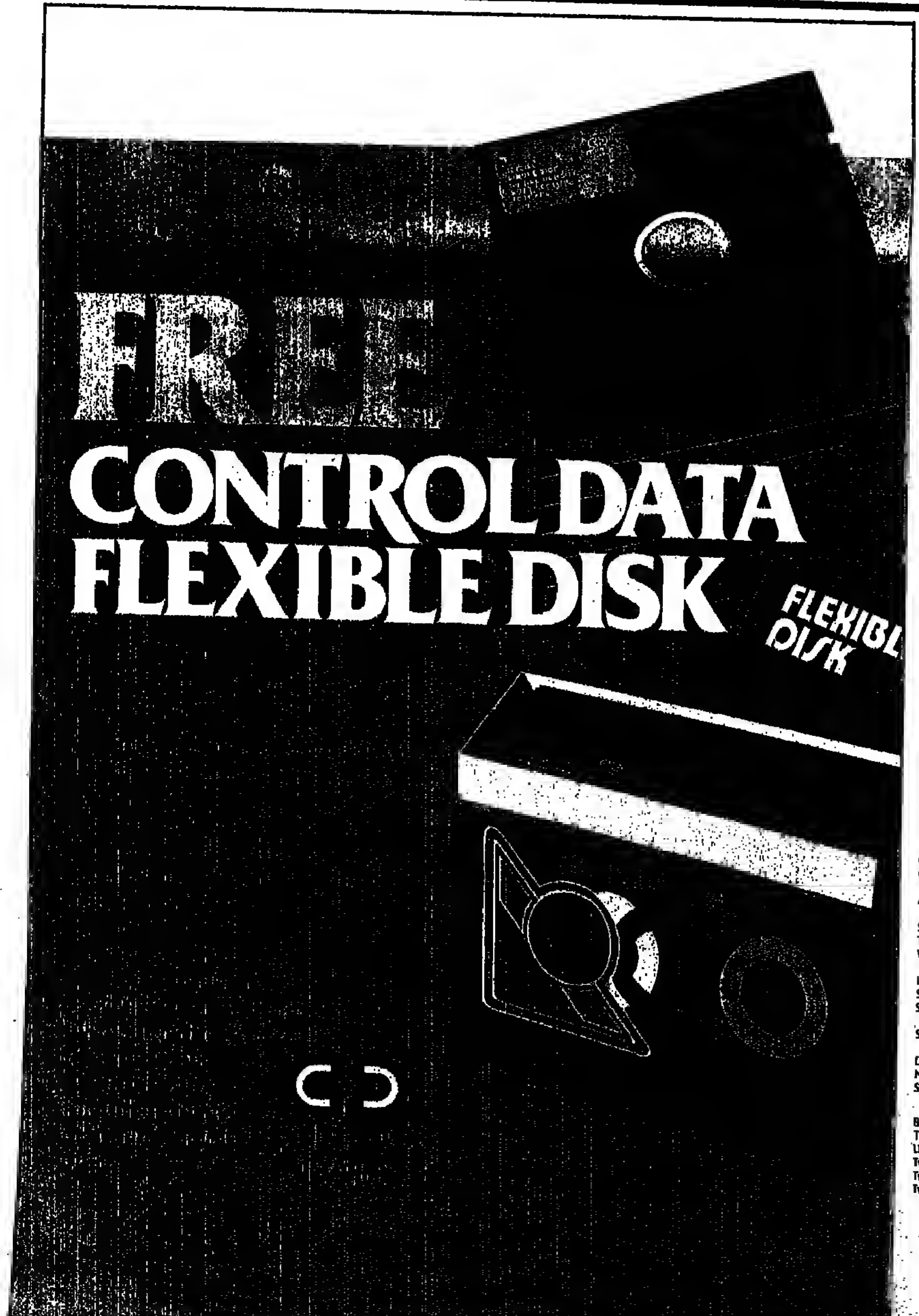
BLEASDALE Computer Systems, maker of the 68000 chip micro running under the Unix operating system, is now supplying the Lex word processor from Ace Microsystems. Bleasdale has also recently adopted the Dyalog APL language from Dyadic Systems of Farnborough.

Condor launch

THE Condor relational database management system sold in the US by DEC and Hewlett-Packard on their micros, has been launched in Europe by MOM Systems of Aberdeen. Condor runs on most 8-bit and 16-bit micros, including the Sirius, IBM-PC and Apple.

Bugs wanted

A DATABASE of bugs – the micro-organic sort – is being planned by the Department of Trade and Industry. It wants to computerise records of national collections of cultures. The laboratory of the Government Chemist is studying the feasibility of setting up the service.



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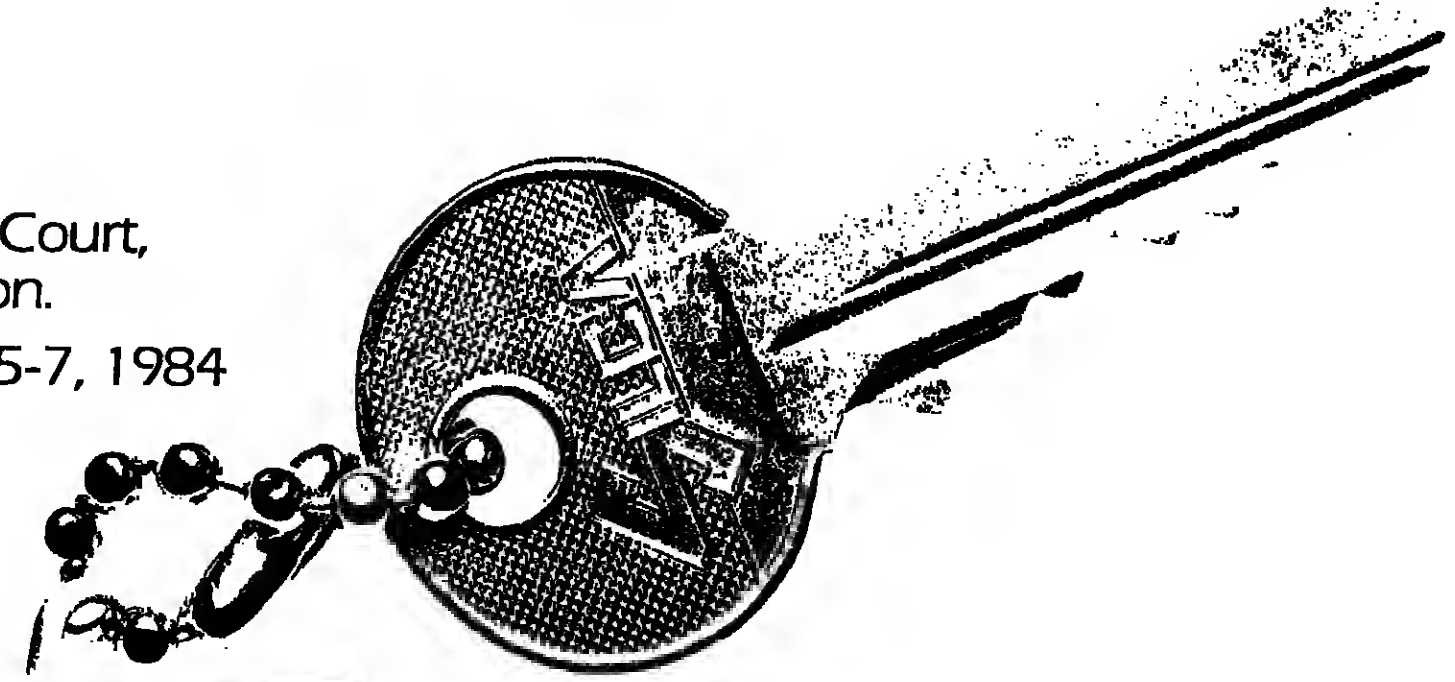

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EXHIBITION AND CONFERENCE

COMPANY NEWS

Booming bureau sells use of micro

by Kevin Cahill

NMW, the small publicly quoted Nantwich bureau, has sold rights to use the company's in-house micro to three other manufacturers. News of the deals broke as computer industry analysts were forecasting a record half-year for the company.

NMW, set up in 1971, specialises in the remote processing of the huge volume of transactions involved in share dealing on the London Stock Exchange.

Working from twin ICL 2972a and mostly Ferranti front-end processors and terminal equipment, NMW provides a real-time service which covers about 40% of all business carried out by brokers in London, the provinces and Dublin.

According to NMW managing director Brian Johnson, the company began working on its micro two years ago and made the first test installations early this year. The micro is based on a standard Z80A with up to one Mbyte of memory and is loaded with telecommunications facilities.

Johnson defended the role of the central bureau, saying that a well-run bureau can always offer efficiencies, in terms of resources and development capability that would be an impossible overhead for a small company.

NMW operates in a market dominated by the NatWest Bank subsidiary Centre-File and the Gordon and Gotch bureau.

In the past two years NMW and the two big bureaux have faced increasing competition from Tim Simons, whose small systems house CCB offers a standalone broking package designed by the company.

HOWES . . . "UK growth will have to run faster than corporate growth."

Cadcentre's US Apollo mission

THE Cadcentre looks set to make a major push into the US market on the back of the Apollo Domain series of high powered workstations. Although ICL is a major shareholder in the Cadcentre, the Apollo system has been chosen in preference to the ICL Perq to ensure maximum impact in the US.

While the Perq, manufactured by the Three Rivers Corp of Pittsburgh, and the Apollo are both US machines, Three Rivers has not attained a high market standing in the US market.

The Cadcentre remains close-lipped about the release of its new product, which is expected at the Design Engineering Show in October.

The link-up with Apollo should be of benefit to both companies. The Cadcentre has a wealth of software but few vehicles to sell it on; Apollo is revving up its UK marketing efforts in a bid to mirror the astronomical growth the company has achieved since it was founded just over three years ago.

Apollo has been achieving a 400% plus annual growth rate: 1981 sales were $3.4 million, 1982 sales were $18.1 million, and 1983 sales are targeted to reach $80 million. Sales for the first half of this year to July 1983 reached $17.7 million.

Apollo plans to have 50% of its sales outside the US by 1987, according to David Howes, Apollo UK managing director. The company has to mirror the profile of large companies like DEC, he says. As a result, UK growth will have to run faster than corporate growth to bring this about.

Apollo expects to have at least 35 employees in the UK by the end of the year, up from nine at the start, says John Parkinson, marketing manager. It also plans to add two more branches to its Berhamsted, Herts, base – one in West London and the other in Manchester.

Apollo computers are not for everyone. Howes explains that the company takes a top down approach to selling, with potential customers singled out for their need for virtual memory, high quality graphics, and networking.

Apollo is not happy over a recent deal which saw Computervision sign a deal with Sun Microsystems, a start-up West Coast US company, to supply it with intelligent graphic workstations. Howes says Apollo had a "handshake agreement" with Computervision, which was reckoned to be worth $50 million.

But when Computervision told Sun that it was the loser, Sun offered a share in its company, and Computervision went back to Apollo and said it was no longer a technical deal, but a business proposition.

Conic marketing push puts ICT in a twist

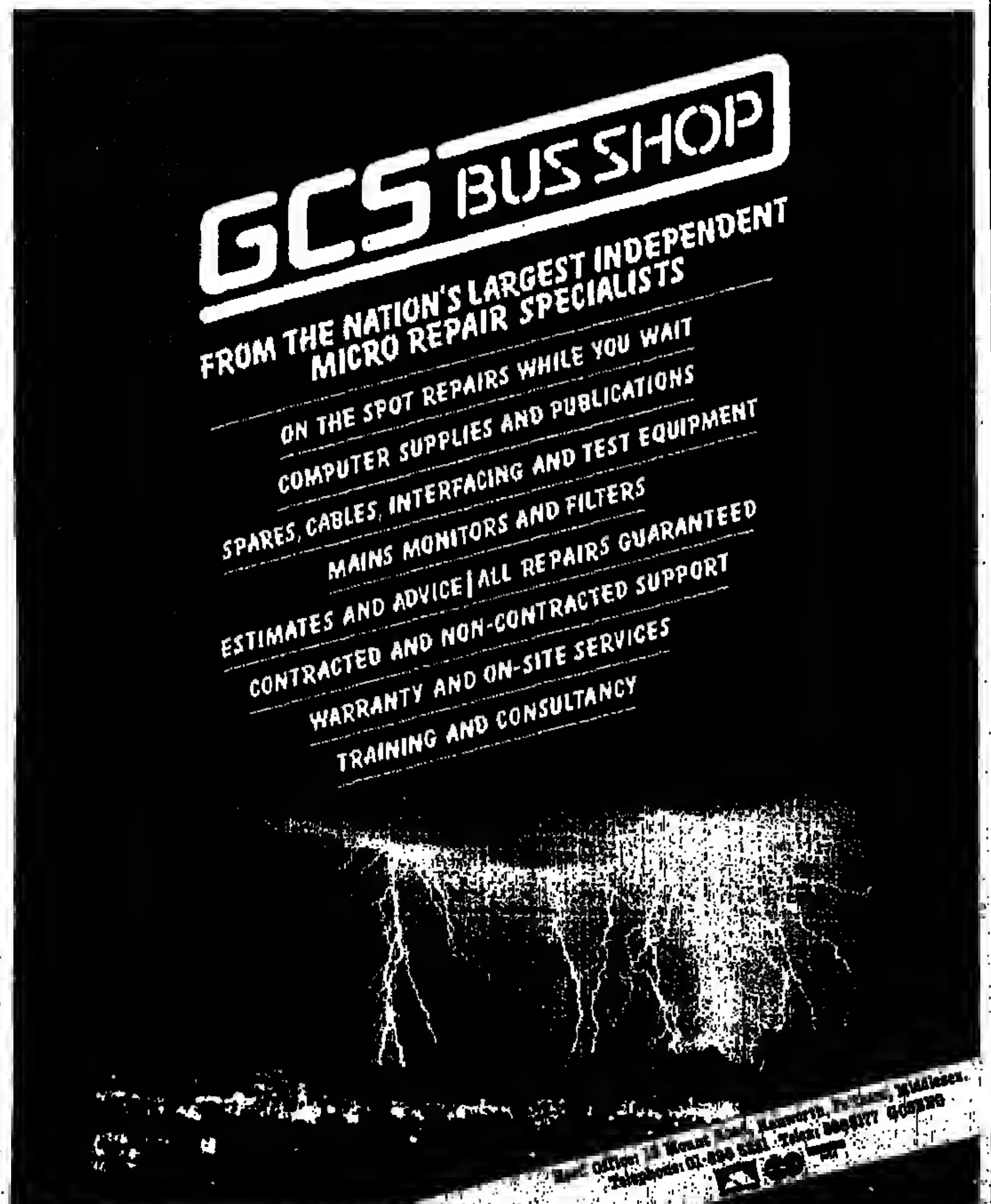
THE tangled affairs of telecomms company ICT are growing even more confused as the manufacturer of its main product begins independent marketing in Europe.

The Conic group from Hong Kong which, it is claimed, is manufacturing the device under licence from the wholly-owned ICT subsidiary, Triple M Corporation, is now mounting a major marketing effort of its own in Europe, offering the Triemco 2000 to distributors on the basis that it is a Conic product.

Conic salespeople have told potential distributors that Conic owns the product and that ICT did not pay the claimed designer SRI, for it.

Conic headquarters in Hong Kong would not answer press queries on the topic.

Cecil Kernot, chairman, and ICT are currently trying to raise more money for ICT. Kernot said that if the money was not forthcoming things would be difficult.



European companies fail to take advantage of weak US dollar

by George Black

EUROPEAN computing companies have failed to cash in on favourable exchange rates to take a greater share of their home market, according to a report by UK systems house Logica for the American magazine *Datamation*.

IBM shrugged off the problems of the strong dollar last year and pushed its European revenue up 10% to $9.7 billion. Its nearest rival was Olivetti, with $1.3 billion – and it moved up to second place only through a batch of acquisitions regarded in the industry as uninspired.

Olivetti bought the Swiss Hermes, the French Logabax and West German Data Terminal Systems.

IBM now has 40% of business included in the survey of the leading 25 hardware manufacturers. In a year in which computing stuck in the doldrums, with only 6% growth, acquisitions were responsible for figures looking better than the reality. Burroughs' results looked impressive – up 30% – but this included the takeover of Memorex.

The Swedish telecommunications firm, Ericsson, similarly showed a sizeable jump of 41%, but this was largely attributable to absorbing Datasaab.

The league table is thus misleading about the true condition of the organisations quoted and their places in the technological hierarchy. For instance, the drop of French Cii-Honeywell Bull behind the German Siemens could be more significant than other more obvious statistical features of the survey.

West German Nixdorf edges into the top 10 and Dutch Philips falls out; but Philips is going to be far more interested in what its partnership with AT&T holds in store than its rank in the pecking order.

Highest growth of those firms which have not been involved in buying up others was achieved by Nixdorf and Wang, both around 25%.

1982 rank	company	1981 rank	European DP rev cal. yr. 1982 (in $ Mil.)	% Change European DP rev. FY 1981/82 (in $)
1	IBM[1,2]	1	9,747	+10.1
2	Olivetti	6	1,310	+30.2
3	Siemens	3	1,278	– 2.6
4	CII-Honeywell Bull	2	1,200	– 6.5
5	Digital Equipment	4	1,041	+ 7.5
6	ICL	5	994	– 8.0
7	Burroughs[3]	16	970	+30.7
8	Sperry	7	813	– 4.2
9	Nixdorf	12	798	+17.4
10	Control Data	9	794	+ 3.7
11	Philips[3]	0	787	+10.0
12	NCR	11	702	– 3.5
13	Hewlett-Packard	13	694	+13.3
14	CIT Alcatel	14	517	– 7.0
15	Honeywell	15	478	– 3.0
16	Thompson-CSF[1]	16	298	– 6.1
17	Ericsson Infor.	21	287	+41.3
18	Wang	23	262	+24.8
19	Kienzle	20	247	+ 7.3
20	ITT	17	220	+22.0
21	Rank Xerox[1]	18	211	– 8.7
22	Triumph Adler	N/A	204	[1]
23	Plessey[1]	22	204	+ 0.4
24	Ferranti	19	190	– 4.3
25	Data General	24	195	– 6.0

N/A Not applicable [1]Not available [2]Estimate [3]Dp revenues include all activities [4]Figures for Europe include African revenues [5]Dp revenues include photocopiers

Table from *Datamation*.

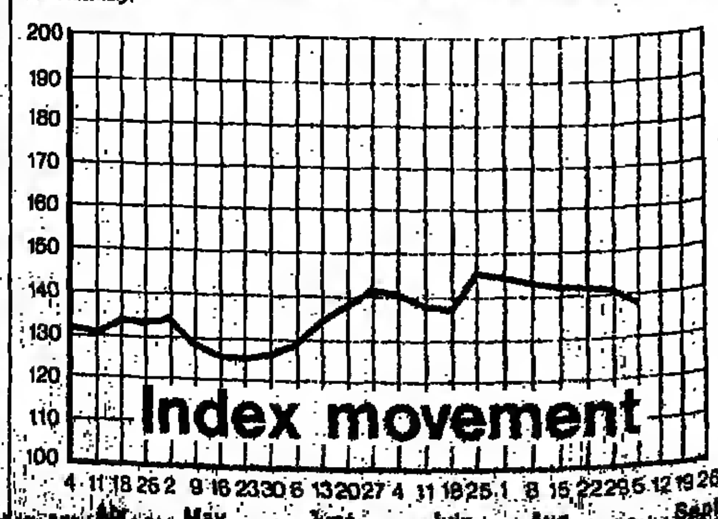
SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Date [illegible] Index 137.86 Change -2.17

Pence 1983 High	Pence 1983 Low	London Stock Exchange Stock	Pence Price	Pence C'nge	$ 1983 High	$ 1983 Low	US Stock	$ Price	$ C'nge
326	298	Abingworth (10p)	310	– 2	29	18¼	Amdahl	17	[illegible]
549	240	ACT (App Comp) (25p)	409	–40	60	28¾	Apple Inc	26¼	[illegible]
88	41	B. Bov Kent (25p)	77	– 2½	60	34¼	Auto Data Pro	34	[illegible]
193	124	Chubb (20p)	147	– 6	97¼	42½	Burroughs	63¼	[illegible]
178	120	Cole Group (25p)	128	12	10	11¼	Comp Auto	17¼	[illegible]
352	152	CASE (20p)	347	– 7	23	17	Comp Sciences	17½	[illegible]
665	540	De La Rue (25p)	605	–	17¾	8½	Comshare	10½	[illegible]
378	284	Extel (25p)	360	1	67½	34¾	Control Data	58¼	[illegible]
669	411	Ferranti (50p)	641	–41	91	37¼	Cray Research	43½	[illegible]
298	192	GEC (5p)	203	–10	73	41	Data General	68¾	[illegible]
92	66	ICL (25p)	84	– 3	24½	10¼	Datapoint	31¼	[illegible]
63	41	Kalamazoo (10p)	58	– 4	127¾	89	Digital Equip	105	[illegible]
379	279	Kode Int (25p)	368	– 7	40½	23½	Elbit Data Sys	27	[illegible]
520	270	Memec (10p)	486	– 5	15¼	9½	Gen Automation	12	[illegible]
190	130	Muirhead (25p)	130	– 8	43¾	19¾	Gould	34	[illegible]
690	466	M'market (1981) ($0.06)	605	– 7	51	35¾	Harris	35¾	[illegible]
2700	867	Norsk Data	2600	–120	48	27	Hewlett Packard	44½	[illegible]
320	207	Office & Elect (25p)	250	– 1	124	85	Honeywell	123	[illegible]
1236	710	Philips Lamp (F1 10)	1087½	+48	43	20¼	Intel	43	[illegible]
248	176	Plessey (15p)	188	–15	128	95½	IBM	119½	[illegible]
90	18	Quest Auto (10p)	67	+ 2	71¾	54½	Itman Inc	55	[illegible]
584	418	Racal Elect (25p)	447	–43	17¾	13¼	MDS (Mohawk D)	13	[illegible]
320	223	Star Comp (10p)	302	– 2	32¾	18	MSA (Mgmnt Sci)	20	[illegible]
610	275	Systems Des (10p)	602	+ 3	10½	18	Mgmnt Assist	10	[illegible]
619	418	Thorn-EMI (25p)	607	10	19	8½	Modular	14½	[illegible]
177	135	UCAT (50p)	167	–	148	84½	Motorola	132	[illegible]
187	130	United Leasing (20p)	183	–10	97	29¼	National Semi	62½	[illegible]
		Unlisted Securities			124½	97½	NCR	119¾	[illegible]
120	78	But Comp (10p)	88	–	34	24	Perkin Elmer	34	[illegible]
130	119	CPU (5p)	118	– 2	29½	15	Prime	19	[illegible]
190	119	Citer (10p)	173	– 3	65¾	44½	Raytheon	48	[illegible]
364	146	Comput (C&F) (10p)	368	–	37½	25¼	Signal	35	[illegible]
270	197	Feedback (10p)	379	–	48¾	33½	Sperry Comp	48¼	[illegible]
190	158	Int'europe Tech (20p)	190	+ 8	24½	19	Storage Tech	29	[illegible]
64	27	J S.D.Comp (5p)	31	– 5	37	24¾	Tandem	30½	[illegible]
95	70	M.M.T. (5p)	89		62½	27¾	Tandy	41½	[illegible]
300	180	Memory Comp (10p)	256	–	171	108¾	Texas Inst	118	[illegible]
478	203	Micro Bus (10p)	479	+43	35	16½	Tymshare	27¾	[illegible]
906	295	Micro Focus (10p)	660	–40	40¾	31¼	Wang Lab B	32½	[illegible]
445	310	Microgen (10p)	410	–15	12	8½	Wyly	12	[illegible]
209	135	Miles 33 (10p)	187	– 3					
94	61	Mnemos (10p)	88	– 2					
230	158	NMW (£1)	230	+15					
173	170	Real Time (5p)	173	+ 3					
120	91	Rolfe & Nolan (10p)	115	+ 3					
187	110	ScanData (10p)	180	– 5					
95	78	Tech for Business (10p)	78	4					
80	63	Trident Comp (10p)	67						
107	65	Zygel Dyn (5p)	100						

The table shows the closing prices in London on Tuesday and in America on Monday. The Share Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



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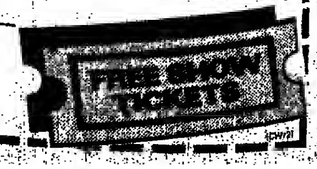

UK Pick costs less, offers more

by Claire Gooding

THE first low-cost 68000 machine running the Pick operating system was revealed in London last week by Aston Technology. Aston is planning not only to undercut other 68000 offerings but to beat competitors by offering the widest range of applications yet available for a 68000.

"One thing you can say about this machine is that there is a whole world of applications software available," said Aston's founder Graham Gough. "We are able to offer a huge selection of Pick applications, which amount to a library, as well as access to all the CP/M software on the market."

Gough and his team, five in all, left Wicat, which manufactures a Unix-based system, several months ago to set up Aston Technology, which will cut costs by assembling in the UK. "We'll be selling systems for £500 less than the IBM Personal Computer," said Gough, "and if that isn't a breakthrough, what is?"

Aston Technology is based in the new Technology Park, which is part of Birmingham's efforts to attract new high tech industries. There, it will assemble its own-label Crystal, built around a 68000 processor board from Pertec.

It will sell Crystal in two series: the R series with RS-232 communication to other terminals, and the C series, which is a networking system using coaxial cable to link intelligent workstations.

The CPU is based on a 10 MHz Motorola 68000 processor, with 16-bit data path and 32-bit addressing. It supports up to four Mbytes of main memory.

Although the Pick operating system, as licensed by Pertec, is the main vehicle for the Crystal, Gough has hedged his bets by supplying a range of alternative operating systems. As well as the native Crystal O/S system, supporting RM Cobol, Business Basic, and APL, the machine also runs Unix System III (an advance on most Unix offerings, which are still stuck on the previous version), Digital Research's CP/M and the BOS operating system and applications from MPSL. Support and training are handled by the various suppliers and by Crystal itself.

The choice of Pick coincides with an enormous resurgence of interest in the system. Pick deals efficiently with variable length records, using relational database techniques.

While the Pick information retrieval language English (now known as Access) provides fertile ground for applications, Crystal has gone one step further by offering a sophisticated applications generator called System Builder, from Atech System builder.

Micro News is compiled by Robert Parry

GOUGH . . . Undercutting other 68000 systems.

Danes aim at low end UK market

by John Riley

LEADING Danish computer manufacturer Christian Rovsing aims to break into the lower end British business market with its new 16/32-bit multi-terminal microcomputer.

The company is marketing the series, called the CR32 series, as a 32-bit minicomputer, although it is based on the Motorola 68000 chip, which is not fully 32-bit, using 32-bit registers but a 16-bit databus.

The basic CPU has a 256 Kbyte memory, expandable to two Mbytes with 21 Mbyte Winchester disc. The series, which is manufactured by Rovsing in Denmark, runs the Unix operating system.

When enhanced by a 10 Mbit serial extension bus, the system can support up to 128 users, the company claims. Base price is around £10,000.

According to Steen Christensen, manager of the UK subsidiary, Christian Rovsing Systems, the CR32 series will be sold "mainly to systems and software houses."

R&D firm sells project design to Thorn EMI

by Caroline Burgess

RD PROJECTS, a small, London-based research and development company, has sold the design of its first project to Thorn EMI. The design, a robot arm and control unit, will be used by Thorn in its own range of advanced robot systems for assembly lines.

Formed a year ago by private funding, RD Projects is another attempt to bridge the gap between academics and industry. Frank Craven, general manager of RD Projects, said his aim was "to turn ideas into commercial products and to fund R&D.

All the work carried out by RD Projects is microprocessor based. It has other projects under way in the fields of automatic control vehicles, CNC (computer numerical control) machine tools and CAD/CAM.

RD Projects, the chairman of which is Sir Hugh Ford, professor of mechanical engineering at London University, funds research work at Imperial College and employs its own staff at its base in Nine Elms.

Thorn's planned robot system will be based on Hazmac, a company it bought recently for £730,000. The first system should be available within 12 months.

Millennium for Tektronix

by Caroline Burgess

TEKTRONIX UK has lined up systems house Millennium Professional and Technical Services to boost sales of its IEEE-488 bus programmable instruments.

Tektronix found it was facing difficulties designing custom systems to meet individual needs. "We were being asked to do things beyond the scope of a manufacturer, so we decided to call in outside experts," explained a spokesman for Tektronix.

No formal agreement has been signed by the two companies. If either company is approached with a problem it alone cannot deal with it will call in the other.

Millennium's managing director, David Pearce, described the agreement as of "mutual advantage". As an independent systems house, Millennium offers a wide range of services concentrating on one-off systems to meet customers' specific needs. It designs systems, puts them together and tests them.

Vocabulary encoding service

CALIFORNIAN speech synthesis specialist Speech Plus has set up arrangements with four chip makers for a vocabulary encoding service. Speech Plus will provide consultation, voice recording and speech encoding services for American Microsystems, Hitachi, Sanyo and Signetics.

The company uses linear predictive coding or a derivative technique called partial autocorrelation. Voice signals – from carefully selected speakers with suitably euphonious voices – are encoded on a Vax 11 780 then downloaded to Eproms for delivery.

Osborne meeting

THE British Osborne Owners' Group will hold its second national meeting on September 17 at the National Liberal Club. All Osborne owners are invited to the meeting from 10am-5pm.

Hitachi delivers

HITACHI is set to deliver a 12.5MHz version of the 68000 micro processor compatible with Motorola's own 12.5MHz device. The chip's speed has been pushed up by optically shrinking the earlier 8MHz version design, and building it in a high speed NMOS process using 2.6 micron line widths.

More dealers

ALMARC Data Systems has increased its number of dealers by 13 to over 40 for marketing the Spirit microcomputer. Launched in June, the Spirit range allows the user to choose the processor to suit his application software.

Gothic offer

MOTOROLA's eight-bit MC68008, its "stripped down" version of the 16/32-bit MC8000 microprocessor, is now available from Gothic Crellon. MC68008 is claimed to offer the performance capabilities of the 16/32-bit model with the economics of an eight-bit system.

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PLATFORM

Tony Milton is managing director of Computrans.

UK firms lag behind their rivals in export enterprise

A EUROPEAN computer publication recently reported prominently that a co-operative export venture by six French software houses has had a first year turnover of £266,000 and was expecting a revenue of $1 million (nearly £700,000) from sales in the US in 1983.

At the same time, American hardware and software is flowing into Germany in such volume that the government there recently introduced legislation to define more clearly the great variety of computer products. Americans do not see language and distance as barriers to product marketing.

The UK is a fully paid-up member of the EEC; it is somewhat closer to Germany than the US is; and it is no further from America than France is; yet it seems to be lagging far behind its continental partners and its American cousins in its export efforts.

While US companies use the UK as a springboard to penetrate markets in the EEC, and other EEC countries export to the UK and to the US, what are UK innovators up to? Why are they not exporting more to the EEC, the US – and even further afield?

UK manufacturers of hardware and software do export their products, but they seem less aggressive in their approach than their foreign rivals.

To help UK firms in their export efforts a firm (Computrans) was launched nearly 18 months ago to provide a translation service for the computer industry. Yet, to date, it has not been asked to undertake any translation work related to the export of UK products.

Discussions with UK British companies have indicated that they have a blind spot when it comes to foreign markets. They clearly prefer to sell to English-speaking countries, where language is no barrier to export.

Translations take time and cost money, but Dutch, French and German exporters have a far bigger language problem. They cannot even contemplate selling their products to English-speaking countries, or to many other countries, without translating program text and other documents. They accept that translation requires investment of time and money and they undertake this exercise as a matter of course.

British manufacturers do not see it this way. Whether this reluctance is due to genetic insularity or to a lack of awareness of the profit potential to be exploited through exports is irrelevant. For whatever reason, the British are fast losing ground to foreign competition.

British hardware and software manufacturers, as members of the EEC, have access to valuable economic concessions with which to attack their largest and nearest market. There are scores of governmental and trade councils and associations to help exporters.

Exploiting foreign markets requires expertise, but this can be acquired. Computrans offers a comprehensive package, including translations of text, manuals and other documents by experts whose mother tongue is the language required, and advice on legislation and other potential pitfalls.

To succeed in export markets, there is a need for a professional combination of data processing, and linguistic and economic expertise.

But Britain has all the expertise on its doorstep. Let's get out there and use it!

Tony Milton

PROFILE

The left-wing boss who praises Tory policies

PHILIP HUGHES is a Socialist and a member of the Labour Party, but he is a strong supporter of many of the Conservative government's technology policies.

The left-wing Logica chairman admires Tory Information Technology Minister Ken Baker and praises what he has done for the computer industry.

"Fortunately the government has not followed its own free market philosophy," he said. "What it has done for ICL, for the space business and the Alvey programme illustrates this clearly enough."

by George Black

HUGHES . . . "A company's shape is fixed quite early, like a boby's."

But he remains severely critical of Tory educational policies: "For Stirling University to have to sell off its land to the American Wang company is just plain daft."

Hughes has climbed to the top (the firm he helped to found is now the UK's biggest independent software group, with an income last year of £33 million) without dropping his egalitarian ideals.

He came into the industry in 1961 without a computing background. His field was operational research, having studied economics and engineering at Cambridge University, with which Logica has close links.

After four years with Shell, Hughes joined CEIR, one of the first computer services companies, set up in the US in the Fifties. CEIR later changed its name to Scicon, and was taken over by BP in the mid-Sixties. In March 1969 Hughes, with Len Taylor and Pat Cohen, set up Logica, which incorporated several features of Scicon.

One was its international aspect. The holding company was established in Holland, before Britain joined the EEC, to give it a solid foothold in continental markets. And it aimed from the start to be like Scicon in its broadly-based functions.

"A company's shape is fixed quite early, like a baby's," said Hughes. "With DEC you can now spot its strengths and weaknesses from its shape at birth. We are like DEC in that we too grew up as a scientific concern."

He noted that things have not changed as much in the British software business as people often think: "The 10 top companies in our field already existed by 1970. They have all had a fairly consistent financial history and have all enjoyed pretty stable managements. You only have to compare them with the ups and downs of hardware firms, or with any 10 in another industry."

The history of Logica's main rival, CAP, has been quite different from Logica's due to its shape at birth: set up by accountants, it spent its youth in batch Cobol systems, which it had painfully to outgrow.

"We weren't that type of firm," said Hughes. "In fact, when our first contract turned out to be payroll, we had to hire someone because none of us knew anything about it."

That problem is unlikely to recur today. With 1,500 staff there should always be someone who knows something about the subject in hand.

Logica's expertise was founded on data communications and spread into a variety of applications. Hughes added: "We also introduced the idea of turnkey systems, but we did it too early. We weren't successful, because people thought only firms like GEC could provide that kind of service."

By 1970 Logica had begun building its own hardware – at Barnet and Swindon. And the rise to prosperity in the Seventies forced Hughes more and more into the limelight of public engagements and responsibilities. Managing director Len Taylor was left to handle the day-to-day running of the company.

Now Hughes gets more invitations than he can possibly accept. Already he is having to check if he will be free to attend events at the end of next year.

An amateur artist, who has had four one-man shows, he is now wondering whether he can find time to complete 50 paintings for an exhibition in autumn 1984.

He also has to prepare material for lectures at Stirling and London universities, and recently took on the burden of serving on the Alvey Programme steering committee.

Logica has been involved in the Alvey effort from the outset and has designed its communications network. Hughes expects Logica to be a part of all its elements except VLSI.

DOWNTIME

Foreign bodies

ALWAYS willing to poke fun at those foreign johnnies, I now bring you a few well-chosen jibes at their inability to speak the Queen's English. The Italians, famous for ice creams, bottom pinching and bankers hanging on bits of rope from London landmarks, think that random access is *randomizzazione* and a software designer is a *softwarista*.

And to avoid any claims of anti-Italian bias, let me add that I'm against nearly all foreign bodies.

Take for example the Germans.

Some of their terms are pretty obvious: *der high-speed processorbus* is obviously a reference to the coach which takes Helmut and his chums to the Siemens factory.

Kupfersandwich is a particularly chewy snack with a metallic taste; and *Schnellprinter* a maker of brochures for a furniture company.

10 YEARS AGO

FROM COMPUTER WEEKLY OF SEPTEMBER 6, 1973: Compec 73, to be held at Brighton's Metropole Centre from September 11 to 13, was destined to continue the growth shown in the past two years as a peripherals-only exhibition . . . The BCS reported that it had wiped out a loss of £67,000 and finished the year with a surplus of £5,400, but members' subscriptions would go up from £11 to £12.

What is going on in this picture? Who is the mystery man with the [illegible]? Suggestions on a postcard please.

Just imagine – it's back to the abacus

DESPITE producing almost 60 million calculators last year, Japan still has a soft spot for its 5,000-year-old precursor, the abacus. It would appear the Nippons are particularly adept at the mental discipline required and can even imagine an abacus and perform calculations on it.

This must surely be an integral part of the much-vaunted fifth generation project.

It is but a small step from imagining an abacus which can actually be used, to imagining a supercomputer complete with artificial intelligence which can actually be used.

And still they come

INDUSTRY observers (my good self and cat) are in agreement that if there is one thing the world needs less than another 16-bit micro, it's yet another computer magazine. Yet still they appear (micros and magazines) with alarming regularity.

I am told that one publishing house has plans for further user mags, to follow in the footsteps of IBM User and Acorn User.

Titles are as yet a closely guarded secret, but ICL User has to be a strong possibility, perhaps with a sister publication Perq Owner.

Why owner as opposed to user? Well, ICL may have sold some of them (you know, the ones with the screens the wrong way up) but as there isn't any software, no one can actually *use* the things.

Chad to be test ground for new weapons

Name taken in vain?

Ready for anything

READERS will have observed the commendable and somewhat atypical restraint I have shown over the fighting in a certain African State possessed of a rather similar (all right, identical) name to that at the foot of this column.

But I feel I must take issue with the report in the *Guardian* of August 19 which infers that I "am being prepared for a test of Western defensive readiness".

Now I don't mind being a proving ground for sophisticated wit and wisdom, but I cannot condone the use of this hallowed column as a proving ground for sophisticated technology aimed at hurting people.

Chad

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, September 8, 1983

Time to tackle illicit copying

MRS THATCHER has an impressive line-up for her seminar on science, technology and industry at Lancaster House, London, on September 12. The country's top industrial brains will gather to discuss how they can encourage the creation of wealth.

If this exercise is to be more than pious aspiration, or just another public relations effort, she could do worse than start by giving a date for the Green Paper on copyright. As usual the most urgent need is not for yet more fact-finding inquiries and thus the familiar proliferation of bureaucratic sub-committees. The real need is for positive action on already well-researched subjects.

Computer industry leaders have repeatedly emphasised that the biggest boost that can now be given to software development would be to ensure that authors will reap the rewards of their considerable endeavours. The cash that has been inadvertently lost to Visicorp through illegal copying would have been enough to finance several Alvey programmes.

An official report as long ago as 1977 urged that Britain should be brought up-to-date with a copyright law that recognised the advent of new technology. It is now more than two years since a Green Paper spelled out to the Conservative government what it had to do.

Yet it would appear that those responsible are still seeking advice and opinions and shunting their memos.

Mrs Thatcher is committed to creating a climate in which the pioneer and the entrepreneur will thrive, rather than intervening directly in the marketplace with public funds. Surely measures such as the modernisation of industrial law ought to be close to her heart. To ignore it is to tempt the cynical response that the pirate is the only entrepreneur to prosper under this government.

Many will argue that the computer people will solve their own problems by and by with the invention of new dongles – hardware protection devices – or ingenious programming which will make it impossible for the parasites to thrive. But it is noticeable that the voices which are loudest in the support of legal laissez-faire belong to those who stand to gain from such inventions. And so far they have offered no more than a partial solution to the problem.

More unbiased critics have been advocating a two-pronged approach, with stronger, clearer legislation operating in parallel with the improved techniques of a self-helping industry.

Apple is to be praised for its strong stand on this issue, however self-interested. It has chased the pirates all round the globe regardless of legal costs, and has been setting some handy precedents. This week's verdict in the US in its favour against Franklin should stir some sleepy legal eagles in this country to review the position here.

We cannot expect our law to follow that of the American, but any news which draws attention to the importance of tackling the dilemma resolutely is to be welcomed.

The micro shake-out

ONLY deft footwork last week by the shareholders of Dragon Data, the manufacturers of the Dragon 32 home computer, steered the company away from the rocks.

The story of the Dragon, and that of the NewBrain micro the week before, is one that looks like becoming all too familiar as the shake-out in the microcomputer industry gets underway. Although both micros were outstandingly successful, in both cases the depths of the troughs between the periods of peak demand were misjudged. Combined with other problems that left a shortage of ready short-term cash.

Pruteq and the other Dragon Data shareholders are to be applauded for the prompt and novel way in which they expressed total confidence in their product. The action marks a coming of age for investors in the industry and is one from which the City has much to learn.

More the pity that the Grundy Group allowed Grundy Business Systems, makers of the NewBrain micro, which is being evaluated by European education departments for use in schools, to take a more traditional route into liquidation.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Tony Kerr, of Aldershot, who wins £5. "A baby isn't just a collection of simple reflexes," says Dr Tom Bower, a leading researcher at Edinburgh University. "It is a powerful computer and will act on whatever information it is given."

Daily Mirror

LETTERS

Solutions are not confined to IBM

PHIL MANCHESTER'S article (*Computer Weekly*, August 18) on relational databases provides a fair assessment of the products available from IBM. Reliance on IBM as a software supplier is an understandable safe option but is not always in the best interest of the customer. To those prepared to look outside this range of products, other solutions become available, which need to be judged on their own merits.

The one underlying agreement of all major software suppliers is that the relational database is the most appropriate tool for an end user decision support system. This system normally obtains its data from a production database, and there are four basic approaches.

1. Employ a network or hierarchical production database and periodically extract information into a relational decision support database (as described in Manchester's article).

2. Retain a network or hierarchical production database, and provide software tools which make it appear relational to end users for decision support purposes.

3. Use a relational database to support both production and decision support functions, and use specially configured hardware (database machines) to overcome the machine resource problems common to most relational database management systems.

4. Use a relational database management system designed specifically to support the volumes and transaction rates required by a production system, while still retaining the simplicity of structure for end user decision support operation.

Some of the implications made by Manchester are no longer valid with currently available products.

As the article mentions, the physical representation of data within a relational database does not have to correspond to the view the end user sees; indeed, many alternative views of the same data must be available concurrently. Far from being a performance overhead as is suggested, this freedom of physical structure allows a modern relational database to be tuned more effectively and with less impact on application programs or end users than ever before.

The highly structured design of hierarchical and network databases is described as a benefit in terms of production databases. In fact, this approach has been an unfortunate necessity due to the performance problems of early attempts at producing relational database management systems. The need to build into a hierarchical or network database all the relationships which are used by application programs has served only to complicate the restructuring of databases to encompass new application areas, and is the principal reason for the failure of the true corporate database. Now that relational database management systems are available which outperform these structured systems, the problem need no longer exist.

A lot of emphasis in the article was placed on ad-hoc updating of extracted databases to provide "what if" functions. Products are already available which permit "what if" manipulation on current data without the necessity of applying any updates to the database.

The main message of this letter is that there is a whole world of experience and opinion outside the closeted existence of IBM, and that prospective users of database products should look at their requirements and the products available before deciding on a line of action with which they will have to live for a very long time.

ROB HAILSTONE
Database consultant
Applied Data Research
Hitchin
Herts

So many answers

ON seeing Puzzler (*Computer Weekly*, August 25) I was slightly surprised that there was likely to be a unique solution. This was confirmed when the first solution I found was entirely different from the one supplied.

Indeed, there appear to be whole families of solutions. I have not checked every one of the following, but I suspect that most of them satisfy the problem.

First factor	Second factor
180-189	556-559
480-489	223-229
880-884*	114-119
885-889	113-119
980-989	112-119

*884 * 113 does not produce six figures in answer.

With something like 250 possible solutions, I suspect that your mailbag will be heavy.

TOM VICKERS
Twickenham

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.

Technology that works

BRITISH RAIL, Southern Region, may be the world's largest working museum, but it has good reason to be (Downtime, *Computer Weekly*, September 1). It uses the technology of the early 1900s simply because it *works*. If he checks out the figures Chad will find that in terms of resources employed the London commuter lines have got all other transport systems licked into a cocked hat.

All over the world transport organisations are trying out replacements for the simple duo-rail DC electric-powered trains – things like guided busways, suspended monorails, etc ad infinitum. But when it comes down to it, two steel rails carrying rolling stock that can be linked into larger units and controlled by one man (produced by unskilled labour too!) is the choice that most of them make.

DC equipment may not be glamorous, like 25KV, but it goes on happily working year in, year out.

It is noteworthy that the recent fire you mentioned struck at the one part that has been updated – the signalling system.

C. R. IRWIN
Loughborough

Attracting a charge

VDUs have an electrostatic charge at the CRT face, agreed (Letters, *Computer Weekly*, August 18). Colour television sets have an even greater electrostatic charge at the screen. The viewer is generally at earth or mean floor potential. The CRT face is a point source of charge; it will and does attract dust particles to itself from thermal convection currents which chance to be near the CRT.

A viewer can become a point charge source of attraction and the most effective way is to have a synthetic fibre carpet. Walking across this will raise one to as high a charge potential as any VDU screen surface can itself possess and I have measured induced charge potentials of over 20kV in a room where there was no powered electronic equipment present.

By all means let's stop smoking, but let's get the electronic matter in a better perspective and remember we experience higher charge potentials with domestic colour TVs and synthetic fibre carpets in our own homes, not to mention greater flicker, bad viewing angles, greater X-radiation, etc.

I. MACWHIRTER
Stockport

Unix in mass production

REGARDING your article, "Mass production Unix is coming" (*Computer Weekly*, August 11), I can only agree with the headline.

I was surprised to see the suggestion that Xenix is ahead of Uni-Plus+ because we know that Root and UniSoft have a considerable technical lead over Logica and Microsoft in porting Unix System III to the Motorola 68000.

It is totally inaccurate to suggest that the current version of Uni-Plus+ available from Root and UniSoft is Version 7, although there are of course some Version 7 releases still available in the market.

Root and UniSoft have been providing ports of UniPlus+ System III to Motorola 68000 based machines since the end of 1982. This product is based on the full System III kernel and utilities as supplied by AT&T. Certain Berkeley utilities are added to the product.

Root has completed System III ports for four manufacturers and further ports are under way. As far as I am aware Logica has not yet completed a single System III port.

R. L. M. SCHLEE
Marketing director
Root Computers
London EC1

All for £7,950

RESPONDING to the challenge from my old colleague at Apple, Keith Hall (Letters, September 1), I would like to point out what you can get from Burroughs for £7,950: One B21-45 with 5Mb of hard disc, single floppy and 512Kb of memory; plus the BTOS multi-user operating system; one compiler (Basic, Cobol, Fortran or Pascal); the BOS operating system from MPSL; Multiplan spread sheet; Write 1 word processor (with windows); BOS Auto-Index; IBM and Burroughs communications as standard.

Of course you will have to use your index finger (rather faster than wiggling a mouse) to select the applications software from the Executive menu on the screen. I think they call it integration.

I could go on but suffice to say you would still have £80 change from your £7,950.

And by the way, we can offer immediate delivery!

OZ HORNBY
ISO marketing manager
Burroughs

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Euromicro conference for Madrid

Talks on latest in chip design

RETIRO PARK, MADRID . . . Secrets may be revealed.

THE annual Euromicro Conference being held in Madrid from September 13 to 16 will provide visitors with a chance to discuss the latest developments in VLSI chip design with people of the calibre of Kenji Kani, system design manager of NEC.

People don't always reveal everything about their latest designs but Euromicro secretary-general Lionel Thomson says he finds the conference a useful forum for discussing the feasibility of new ideas.

Thomson was able to get his plans for a local area networking system called Multilink discussed at an earlier conference before development by his company Hawker Syddeley Dynamics and Engineering.

"The only reason I'm in it is to see what I can get out of it," Thomson said. "I wanted to spread the gospel – to know whether the idea was good. We did not give away detailed software and engineering plans."

Euromicro was set up in 1974 as a forum for discussions on research in microelectronics and microprocessors. A board of directors is elected from each country to represent universities and industry. Current UK directors are Derek Wilson from the Central London Polytechnic, Peter Fergus of the UK Atomic Energy Authority, and from industry Thomson himself.

The main source of revenue is the conference, which usually attracts about 500 people. Delegates pay £200.

"This provides a surplus to keep the office going," said Thomson.

At the conference papers are presented and panels discuss scientific and technical applications, and practical subjects such as compiler construction, multiprocessor bus systems, distributed processing and education.

From the UK Richard Fothergill will be talking about the Microelectronics Education Programmes, and Thomson will chair a session on industrial systems. There is also an exhibition, with 76 stands of hardware, development tools, and peripheral equipment.

An added attraction is the Euromouse competition – a race through a maze between robot mice.

One-year training for young workers

by Nuala Moran

CONTROL DATA is taking a major part in the government's Youth Training Scheme (YTS), with courses for 700 unemployed school-leavers in computers and electronics starting this month.

One-year training programmes in electronics, data processing and high technology office skills are being offered by Control Data Institutes in Birmingham, Bristol, Leeds, London, Manchester and Nottingham.

Trainees will spend 13 weeks at the Control Data Institutes, and the other 39 weeks getting practical experience in neighbouring industries with a computer or electronics bias.

According to the Manpower Services Commission (MSC), which runs the YTS scheme, many firms have offered work experience to the trainees. But few have the resources to cope with the 13 weeks of classroom training and the administration.

Control Data will act as a managing agent for the MSC. It will be responsible for advertising the courses, selecting participants and finding placements in industry.

Each of CDI's three courses has a core element of three weeks personal development and two weeks computer literacy, based on the BBC microcomputer. The electronics course then goes on to deal with components, basic electronics, assembly, fault-finding and repair.

The data processing course includes data control and preparation, post-processing procedures and basic programming. The office skills course will include keyboard skills, word processing, and office methods and equipment.

The electronics and data processing training will be geared respectively towards the City and Guilds examinations Electronics Servicing part 1 and the Basic Certificate in Computer Programming.

Man with a mission to clean up the VDUs

ROMAINE . . . Keep it clean.

CLEANING video terminals does not sound the most glamorous of business activities, which may explain why it often does not get done. Paul Romaine was so appalled by the filth in which VDUs wallowed where he was working that he decided to start up his own computer cleaning business.

It could hardly have got off to a better start, as 21-year-old Romaine is one of 20 young people who won the London Head Start in Business competition run by the Abbey National Building Society and the Industrial Society.

Romaine was publicity and rent-free, rate-free premises for the first year. "I also get counselling in business methods from the Industrial Society," he said.

Romaine has been in business four months, and says he has found it an uphill struggle to persuade big companies to have their VDUs and disc heads cleaned.

But he has managed to win a few contracts from direct mail shots.

For organisations unwilling to pay for a full cleaning service, Romaine supplies a self-cleaning kit made by a US company.

This kit is the one most widely accepted in the industry, says Romaine, and is sold by Burroughs, Philips and Xerox under their own names. The VDU cleaning part of the kit will fit into a drawer and can be used 40 times, says Romaine.

Romaine's business is called Screen Care, and is based in Caterham, Surrey.

Other winners of the Head Start competition include a snooker cue maker, and a caterer specialising in Caribbean cuisine.

Design and marketing competition for engineers

by Caroline Burgess

COMPUTERS will take a front seat in a government-backed competition for engineers to demonstrate their ability to take a product from drawing board to market.

The competition, called Temework (The Engineering Management Exercise), starts in October and calls on engineers to simulate the design, production and marketing of a product.

A range of software will be issued to the teams taking part to help them to cost the product and make sales forecasts.

Teams of three to six people are being invited to enter the competition, which will be held in three rounds. The first round, from October to December, will end with requests for venture capital from each team.

One-fifth of the teams will qualify for the second stage. They will have until March to take the product from its design stage to its launch.

Four teams will then go on to the final.

Temework is being sponsored by the Engineering Council, Ashridge Management College and *The Engineer*. The exercise and the software have been developed by Jeremy Hall, who constructed similar schemes while working for Honeywell and later ran management exercises from his own consultancy.

The software will be supplied on cassettes and will run on Sinclair's Spectrum and ZX81, Dragon 32, Commodore Vic 20, Tandy Colour, Computers Lynx and the BBC Acorn.

A listing in Basic will also be available.

Entry fee for the competition is £70 and there is a first prize of £2,000.

"It gives me pleasure to declare these tape decks officially defunct."

PUZZLER

1 6 7
1 7 1
1 6 7+
9 5 9

HERE is an unusual variation on the alphametic theme. As always, we are searching for a valid sum, but in this case actual figures are already in position.

However, every one of the five digits utilised is in fact wrong. Given just this information, you are asked to reconstruct the sum. See page 71 for solution.

Prolog – it's good fun but can you explain it?

THE language Prolog is being talked about a great deal, partly because the Japanese are giving it much red carpet treatment in their fifth generation project. But does anyone really know what it is?

The experts presumably do, but they seem incapable of explaining it to lay people. They can tell us what it is good for – natural language processing and artificial intelligence applications – but even sample programs leave people wondering what it's all about.

When I first played with the language on a micro, I enjoyed it immensely. It was so much more fun to use than Fortran and Cobol. And I have it on high authority that the reason for its favour in Japan is that Kazuhiro Fuchi, the technical director of the fifth generation project there, took a fancy to it after one of his underlings brought it back from Stanford University in the US. The main competitor was Lisp.

Stanford had got hold of the language from Edinburgh University, where much of the early work was done under Bob Kowalski.

But, as often with pioneering work, other people had a similar idea. At Marseilles University, a similar language was being developed for automatic language translation. The two separate strands of development have since been tied together in Prolog.

The result is a language that, unlike most other computer languages, is based on an obscure branch of mathematics rather than the need to crunch numbers in commercial data processing departments.

As the language is now so much in vogue, an Oxford University team has produced a paper about it. Stuart Shurrock, of the university, says that anyone with some knowledge of computers will understand it.

It is, in fact, based on three papers written in Marseilles, which, said Shurrock, were written by people with Prolog flowing in their blood.

A computer warning from the weatherman

MUCH has been said in the serious daily newspapers about the dangers computers could bring. Now a warning comes from Sir John Mason in his presidential address to the British Association.

There is some wisdom in Mason's words, but he drew too heavily on his own experience of computers (writes Philip Hunter).

Mason is just retiring from a long spell as director-general of the Meteorological Office.

His warning to the annual meeting of the British Association was that computer models should not automatically be applied to complex fields such as economics or social behaviour, where – unlike meteorology – there are no basic laws.

There was a danger, Mason warned, that governments would become dominated by huge computer models of the economy based on the whims of biased individuals.

But later in his address Mason fell into the trap of generalising his experience of computers in weather forecasting to other applications.

Computer models may provide guidance in the medium term, between the misleading short-term fluctuations and the long-term unpredictable outcome, he said.

This statement is true of weather-forecasting, where computer models can neither cope with hour-to-hour local fluctuations nor forecasts of longer than 10 days, when the inaccuracies of the model pile up.

But it is not true in governmental forecasting. People in the computer industry are well aware of the fallibility of advice generated by mathematical models. What needs to be stressed is that what comes out of a computer bears a direct relationship to the assumptions made by the designer of the program.

Workplace is compiled by Philip Hunter

FERRANTI
Selling technology
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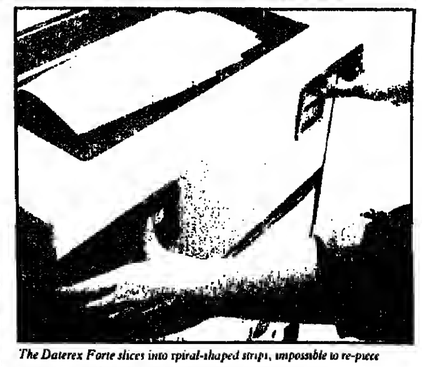
SIMULATION

SEE PAGE 47

Spies are keeping an eye on your printout

John Mallindine looks at the problem of waste paper in company security



The Daterex Forte slices into spiral-shaped strips, impossible to re-piece

EVERYBODY knows how much printout computers can churn out and how fast they can do it. Paper is generated at such a tremendous rate that it can be a headache getting rid of the bulk that is soon unwanted.

In busy offices, harassed executives, preoccupied with the pressing problems of the moment, often forget the requirements of security when they discard material. With the spread of microcomputers and their associated local area networks throughout each organisation, the security risk is greater than ever.

And the word processing facilities of these micros, and ever more sophisticated office equipment such as the new electronic typewriter, exacerbate this explosive growth in paperwork and add yet another security hazard.

One crime prevention officer recently picked up some discarded printout from a waste paper basket and asked what it was all about. The embarrassed computer room manager had to confess it was a complete European sales forecast, finely analysed by product and sales area.

Leading international security adviser Vincent Carratu reports that industrial espionage is growing fast. He believes it has been accelerating rapidly since the UK joined the Common Market.

Management can be incredibly naive when it comes to security. Carratu says: "You just have to walk round the back of any large modern office block and look at the rubbish tip. Ten to one you'll find bundles of printout piled on top of the usual black refuse bags. Management would have a fit if it took the trouble to find out what they contained.

"Recently I heard of a case where a draft copy from a word processor of a confidential report on insurance surveys of premises had been discovered on such a rubbish tip. That report contained detailed evaluations of the strengths and weaknesses of premises that would have been a gift to any burglar.

"The report also revealed full details of the movements of money between identified locations, including the timings of those movements. Such carelessness invites hold-ups."

If you want to check on security in your office, just stay behind one night – talk to the cleaners and look in the waste baskets. The chances are that you will learn a thing or two.

Carratu's advice is simple and unequivocal. If you want your secrets to remain secret, shred all waste paper and obliterate all superfluous microfilm and fiche.

Those worried about shredding after reading reports of how the Iranians reconstituted shredded documents in the American Embassy in Tehran will be reassured to know that there are many types of shredders now available that will cut papers in various degrees of sophistication, according to the security needs.

Some will cut paper into long, thin strips, others into shorter, thinner strips. Still others will reduce waste into confetti-like proportions.

The price of shredding is not high; costs vary according to the equipment's size, complexity and application.

Some documents are less security sensitive than others. Much waste is of a non- or semi-confidential nature, with little or no value to the spy. The majority of this material can be safely disposed of by the basic office shredder, which reduces it to long thin strips typically between 4-6mm wide.

More secure are models that cross-cut waste into small strips of 3.8x40mm. Some machines cope with waste by the basketful. Rubbish is simply tossed into the hopper.

These particular machines have a voracious appetite: they will even gobble up the odd drink can.

Many basic office shredders are fitted with castors so that they can be wheeled around to collect waste from a number of departments. Many have integral baskets, into which waste is compacted. The plastic liners, often transparent, are simply lifted out when full.

Some large-scale shredders have associated conveyor belts, feed rollers and balers, and can destroy 150 sheets at a time including heavy brochures, cardboard covered files, cardboard boxes and large format paper.

The security implications of destroying unwanted microfiche and microfilm should also be considered. It is often tempting to delegate the job to an outside specialist agency, which will not only collect it, transport it away and destroy it, but will also be able to reclaim its silver content in the process, thus helping to offset the cost of the operation.

If microfilm and fiche is sold in this way for reclamation, it should be reduced to miniature confetti first to make it fully secure in transit. In any case, in this form it is easier to recover the silver.

The detail occupies such a minute space on microfiche and film, it is obvious that it must be shredded exceedingly small. High precision milling mechanisms in machines will turn this material into dust.

Less security sensitive material can be reduced by alternative machines into particles of about 0.6mmx7.5mm.

There is no practical alternative to shredding. Incineration is not 100%- secure – documents have been known to escape up chimneys. With shredders there is no heat and no fire risk.

The same argument applies for destruction by pulping or by the hammer mill process (pulpers will not accept certain grades of paper and the hammer mill process still leaves pieces of waste large enough to be legible).

With office shredders you can watch over material being destroyed. You can rest easy in the knowledge of a job done in a secure environment.

You would be free of nightmares of cowboy security destruction agents brought in from outside, and attendant horror stories of highly confidential material somehow "blowing in the wind" across some rubbish tip.

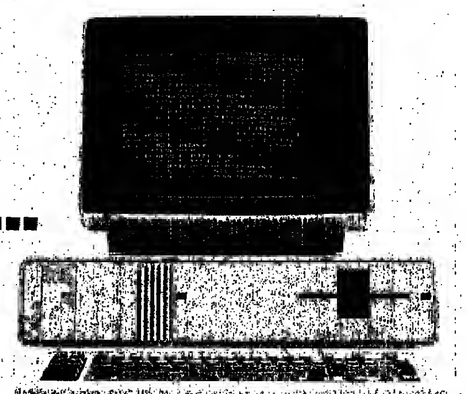
In addition to recovered silver from microfiche, shredded paper has a market value too. Waste already broken down and bagged ready for recycling is obviously going to be of more value to waste paper agents. So your security efforts pay in more ways than one.

John Mallindine is manager of the Mailroom Equipment Division of Hasler (Great Britain).

Iranians reconstituted shredded documents from the US Embassy in Tehran – better shredders are now available.

For those who thought choosing a user friendly, high capacity, software compatible, multi-user, business computer was a black and white decision:

The RAIR Business Computer...



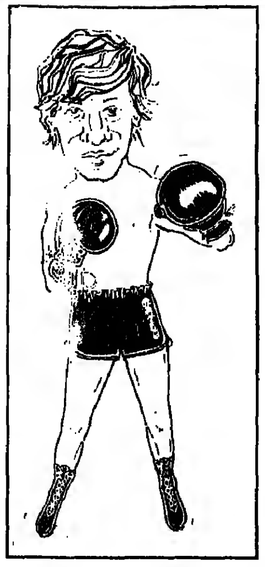
in colour.

For details of your nearest Authorised RAIR Business Computer Dealer contact Phil Harris, Rair Ltd., 6-9 Upper St. Martin's Lane, London WC2H 9EQ or telephone 01-836 8921.

The Rair Business Computer incorporates both 16-bit 8086 and 8-bit 8085 microprocessors, up to 1024K bytes of RAM, 20M bytes of disk storage and supports up to four workstations running CP/M*, MP/M* or MS-DOS* compatible software.
System prices start at £6500 plus VAT.

*CP/M and MP/M are trademarks of digital research, MS-DOS is a trademark of Microsoft

SOFTWARE MONTH



The battle for 16-bit micro software hots up

Sixteen-bit microcomputers have been around for several years, but commercially viable systems have been available for only 12 to 18 months. Hardware is worthless without its software, and the software companies have been waiting to see which 16-bit operating system establishes itself as the industry's standard before committing themselves. As a result a growing number of 16-bit applications have simply been translated from established eight-bit systems, and there is a dearth of packages written specifically for 16-bit hardware

THE market has been spoiled by the 8-bit phenomenon known as CP/M. Never before in computing history has there been, and possibly never again will there be, such a single, dominant, universally accepted standard.

The emergent 8-bit market was completely different from the emergent 16-bit market. CP/M became established before any rivals appeared. The snowball effect then took over and its sheer market dominance eliminated and/or prevented any opposition.

For the 16-bit market, software houses are competing head-on to establish their own operating system, and there are already several minicomputer 16-bit operating systems, such as Unix and the proprietary DEC PDP-11 systems.

Because of the fundamental difference between minicomputer and microcomputer usage, it is unlikely that a minicomputer operating system will be adopted as the standard for microcomputers. Minicomputers are usually controlled by computer operators and/or trained data processing managers. The applications user rarely comes into contact with the operating system, which has, therefore, evolved into a system for the professional DP man – not the non-technical end-user.

Microcomputers, on the other hand, mostly have a single user, who is both systems operator and applications user. But he is rarely a technically qualified computer professional; so he needs an operating system far more friendly than a typical minicomputer system. This explains Microsoft's attempts to turn the unfriendly Unix into the user friendly Xenix.

Although there is no single standard operating system, there are two clear front runners for the mass commercial market: CP/M-86 (or probably the new Concurrent CP/M-86) from Digital Research, and MS-DOS from Microsoft. These two companies are market leaders, and keen rivals. They are competing not only in operating systems, but in almost every sphere of computing.

First one and then the other seems to gain the ascendancy, only to be overtaken by the other. At the beginning of the year it was being claimed that MS-DOS was already the established standard. Then, Concurrent CP/M-86 was released, and less was heard of single-tasking MS-DOS. Next, Microsoft announced its MSX home computing standard specification, produced in collaboration with the Japanese government and clearly of fundamental importance to the development of the automated home.

Digital Research countered this with the claim that Microsoft had jumped the gun, and that disaffections were occurring. Now DRI has announced its own specification, called VIP, which is probably of greater relevance than MSX. It has also announced its new Personal Basic for home computers, aimed at breaking the dominance of Microsoft Basic on computers such as the Orle and Dragon 32.

Sinclair (Spectrum), Mattel (Aquarius), and Camputers (Lynx) are currently talking to DRI about CP/M implementations, and many other UK home computer manufacturers are interested. If a computer has disc drive capabilities, then its manufacturer is probably thinking CP/M.

Microsoft, on the other hand, says claims that the Japanese are not satisfied with MSX, are untrue. There are rumours that several named disaffections never happened, and that one firm was persuaded back into the fold by the Japanese government. Microsoft claims that the next version of MS-DOS will be multi-tasking.

There is little appreciable difference between concurrency and multi-tasking for the commercially oriented single-user microcomputer market. Neither phrase is even mentioned in the *Dictionary of New Information Technology* (Century, 1982), while the *Concise Encyclopaedia of Information Technology* (Gower, 1982) equates multi-tasking with multiprogramming, which is the technique of running multiple programs in a single computer so that "while one program is awaiting some event (usually an I/O interrupt), another can be executing".

Concurrent programming, however, is defined as the technique "whereby a number of programs are executing in a computer" so that "they are effectively running in parallel". It is unlikely that the word processing supervisor or the office accountant will be much concerned with the finer points between them.

Rob Bell, software development manager at Future Technology Systems, commented: "The abundance of conflicting reports and opinions makes it difficult to anticipate what DOS III will offer. Concurrent CP/M offers both multi-tasking and concurrency. Concurrency gives the user the ability to perform a number of jobs simultaneously and switch between them. The user can see, feel and use the facilities offered by concurrent CP/M. Multi-tasking is a more traditional internal feature put there by the software implementer. The esoteric concept of multi-tasking is altogether more difficult for a user to grasp."

This, then, is the current state of the rivalry between the two dominant systems software companies seeking to establish the standard 16-bit operating system. Both companies are still conducting themselves well. Much of the publicity about the rivalry emanates not from the companies but from individual dealers striving to help their own selected operating system.

Few people will forget the amazing campaign from ACT at the beginning of the year, when the Sirius importer, or people closely associated with it, did virtually everything but deny the existence of a company called Digital Research.

This was astonishing, considering the current view of ACT. Richard Gray, technical director of ACT Pulsar, commented: "CP/M was the first operating system to the mass market. With the arrival of 16-bit hardware, MS-DOS would have buried CP/M-86. However, the advent of Concurrent CP/M-86 shows that Digital Research has leap-frogged Microsoft, and we are all waiting to see how MS-DOS 3 answers the challenge.

"We are now pushing Concurrent CP/M-86 on the new Apricot, and would like to do so on the Sirius, but must wait for that option from Victor in the US.

"Much of the implementation work of putting Concurrent CP/M-86 on the Apricot was done on the Sirius. Now Microsoft and Digital Research are the two main suppliers of 16-bit operating systems. Competition is good for the market. Like IBM, we would like to support both camps."

Of the two, it is probably fair to say that Digital Research is more commercially minded than Microsoft.

David Fraser, general manager of Microsoft (UK), said: "Bill Gates of Microsoft and Gary Kildall of Digital Research are both electronics visionaries, very much on a parallel. They can both see far into the future of electronic applications, beyond the view of most mortals. The difference, if there is any, is that Gary is a commercial engineer, always with one eye on the market; while Bill is a pure engineer, with his eye more on R and D than on market trends."

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The college buddies who are now challenging Digital's CP/M

GARY KILDALL and Bill Gates are the names behind the battle for 16-bit supremacy.

The story of Kildall, a young consultant working for Intel and developing CP/M in his spare time, is well known. The story of Microsoft is less well known, but goes a long way to explaining the rivalry. Microsoft started as a CP/M software house; it is a parasite that has outgrown its host, for it is now larger in size and turnover.

The story of Microsoft is really the story of two men: Bill Gates and Paul Allen. Allen is the elder, but they grew up together in Seattle, and attended college as friends, with a common interest in computers and computing. While at college, they were able to access a large DEC machine and began to find bugs in the operating system. DEC was surprised – in fact, so surprised that the minicomputer giant offered a year's free use of the machine if the pair could find 10 more bugs. They found 40. Naturally, during that time they made full use of the computer, and became experts in DEC's Basic.

For a while after college the two went their separate ways. But at about that time a small company called Altair in the Southern states put together probably the first microcomputer, little more than a chip in a box. Allen contacted Gates and persuaded him that they could implement DEC's Basic on the new micro.

Together they contacted Altair, which was interested in, if sceptical about, the project. Bill Gates and Allen did it in 10 days.

They put their new version of Basic on to paper tape and took it to Altair, arriving the day before the demonstration. There was almost a disaster when they found that the Altair operated on a different paper tape code from the one they had brought.

It is said that they stayed up all night converting their tape to the required format, and that they implemented it on the Altair next day, where it ran first time.

How Microsoft became a top 16-bit contender

A profile of the company that is fighting Digital Research for supremacy

GATES . . . Told IBM the entire design concept was appalling.

DAVID FRASER tells the story of how Bill Gates and Paul Allen set up Microsoft: "Versions of the same Basic were sold to Apple and Commodore, and on the strength of the increasing interest in their Basic, Gates and Allen formed Microsoft in Albuquerque, where they felt the microcomputer action to be centred. But they didn't like it and soon moved back to their home town of Seattle, where Microsoft's headquarters has remained ever since.

"Here they stayed and here they grew, specialising in languages, and particularly the Microsoft Basic that became the CP/M standard programming language. Microsoft became an extremely successful CP/M software house and, although not many people realise this, has actually installed more CP/M than Digital Research itself.

"During the course of implementing both CP/M and Basic on different machines, Microsoft developed a reputation for knowledge of hardware as well as software. Microsoft has actually had a hand in hardware design for a number of leading manufacturers. It was perhaps for this reason that IBM approached Bill Gates with its original plans for a new micro.

"Bill was amazed. He told IBM that the entire design concept was appalling – an 8-bit cassette based system. The system, he told them, must be 16-bits and disc based.

"IBM accepted the criticism, but then asked where they could get a 16-bit disc-based operating system. Existing rumours suggested that Digital Research was about to release CP/M-86, so Bill suggested that IBM visit DRI. This it did but DRI was unhappy with the restrictions and stipulations that IBM demanded. No deal ever emerged, so IBM went back to Microsoft and suggested that, if Bill knew so much about operating systems, perhaps he would like to produce one himself.

"Bill knew of a local Seattle company already working on a 16-bit version of CP/M. This, incidentally, explains the apparent similarities, at the user level at least, between MS-DOS and CP/M. Anyway, the ultimate result of this collaboration was DOS 1, implemented on the IBM PC as PCDOS, and elsewhere as MS-DOS.

FRASER . . . Home town hq.

We have always learnt from our mistakes. Now we probably know the needs of the market better than any other company

"They are, however, the same operating system, and the differences between the two are no more than the differences you might expect between any two MSDOS implementations.

"Sirius MS-DOS is perhaps the only outsider, everywhere else MS-DOS is implemented at the bottom of memory, but Peddle wanted to do something else with graphics and decided to put it at the top."

This, then, is the company fighting Digital Research for 16-bit supremacy. At the moment, Digital Research is ahead with Concurrent CP/M-86. Rumours suggest that there may be some surprising announcements from leading manufacturers deciding to adopt Concurrent CP/M-86 during the next few weeks and possibly before this issue of *Computer Weekly* is read.

It is only fair, then, that the last word should go to Howard Kornstein, DRI's European director of technical support: "DRI is no longer the only supplier of microcomputer operating systems in the market. It will, however, remain the most experienced company. Over the years we have developed experience in operating systems second to none.

"We have made mistakes – that's part of the learning process (8-bit MP/M was a mistake – technically we succeeded, but an eight-bit processor simply cannot support the demands of multiple users). But we have always learnt from our mistakes. Now we probably know the needs of the market better than any other company.

"By developing our own graphics system, for example, we are moving towards ever more advanced operating systems – a graphics driven visual CP/M requiring no user manuals is feasible. And by linking such a Concurrent operating system into the next version of CP/NET (which will support communications not only to other micros, but also to mainframes), we shall have 16-bit operating systems capable of supporting the complete automated office."

KILDALL . . . One eye on the market (see page 22).

From today the big names in terminals have changed their inter-face.

For eight years we have been busy bringing together the most important OEMs with some of the biggest end users in the marketplace. On one side Hazeltine, Texas Instruments, IBM, DEC, Qume, Datamedia and Centronics. On the other, Marks & Spencer, CCTA, Channel 4 TV, Ford Motor Co, GEC. Both our clients and our suppliers have enjoyed a high level of professionalism and service. They knew us as Rair Terminals.

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SOFTWARE MONTH

The system with the pedigree

'Unix is much loved, and rightly so, by programmers'

WHILE MS-DOS and Concurrent CP/M-86 fight it out for supremacy among 16-bit operating systems, Unix and its derivatives are becoming ever more popular. Digital Research believes that Unix is probably the biggest threat to Concurrent CP/M-86. MS-DOS 2 is so far single-tasking and therefore no threat, while the P-System technically competes in terms of portability, but cannot ultimately compete when its portability is based on a Pascal interpreter. (CP/M's portability is based on a C compiler.)

"Unix, however," claimed DRI's Howard Kornstein, "is a development system. It is much loved, and rightly so, by programmers, who enjoy the cryptic ability to string multiple commands on one line. But it is not an operating system for the end-user."

It is because it is not a system for the end-user that a number of other software companies are heavily engaged in producing user friendly versions.

Max Hotopf of Keen Computers, a firm with a long history of interest and expertise in Unix, said: "It is perhaps the only large operating system that was developed specifically to provide the user with a good programming environment.

"It was originally developed for, and is still largely used on, minicomputers.

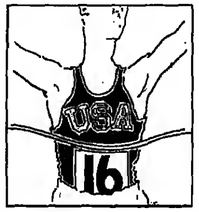
"The Unix story began in 1969, when it was developed on a DEC PDP-7, at Bell Laboratories, for the parent corporation, AT&T. It was developed primarily for internal use, by and for Bell Labs, and was never intended as a commercial venture. Indeed, US anti-trust laws forbade Bell Labs from selling any commercial software for Unix.

"Because of these anti-trust laws, the use of Unix outside AT&T was restricted for many years to the non-commercial academic environment. Bell Labs was prepared to grant licences to universities and institutes of higher education, but the cost of a commercial licence was prohibitively high.

This Unix developed as a sophisticated and well documented operating system within academic circles. Now a flood of Unix expertise is becoming available to the commercial world as the graduates who used Unix extensively during their studies leave university.

"The appearance of Unix in the commercial computing world came with the final granting of commercial licensing agreements to hardware manufacturers in 1980. By this time, Unix was already a highly portable operating system, running on a variety of hardware systems. Today, there is a bewildering number of so-called 'Unix-compatible' systems, and it is important to examine them closely, as some come closer to the genuine article than others. Idris, for example, which runs on DEC's LSI-11 range, was developed to resemble a Unix version 6 system, before the advent of the commercial licence, and as such, is a reconstruction of Unix rather than a true implementation.

"There are other companies that have obtained a commercial source licence from Bell Labs, and have enhanced Unix, making it more user friendly, such as Interactive Systems Corporation, which markets a product called IS/1, which will run on Vax or Onyx systems



for the role of industry-standard, machine independent multi-processing system. No other operating system is available across the broad range of multiprocessing systems being released into the market.

These views are largely echoed by Precision Software, a software house that decided to base its products on Unix.

John Tranmer, Precision managing director, commented: "Unix is now the only serious contender

The major strength of Unix to purchasers of multi-user systems is that it provides a truly portable environment. It handles any number of users equally well; can support user directory structures to any level of differentiation; and is itself highly portable, being implemented for the most part in the high level C language

(ISC does not manufacture its own hardware).

"Other companies, such as Plexus Computers, obtained a Version 7 source licence, and implemented it on their own hardware, just as it came – a 'plain vanilla' Unix. At present there are versions to run Z8000 systems (Plexus, ISC, and Microsoft implement these), and there is a version for the 6809 chip (UniFlex), and of course, for the DEC range."

"Unix has a similar pedigree to DG AOS or DEC Vax, but has had some 12 years in which to mature before first becoming available commercially in 1980. It has had the advantage of a huge development investment in the relatively cloistered atmosphere of Bell Labs, the research arm of the world's largest corporation.

"Because of the anti-trust laws, Bell Labs was effectively prevented from becoming a minicomputer manufacturer itself. This meant that Unix became a particularly attractive operating system for other manufacturers.

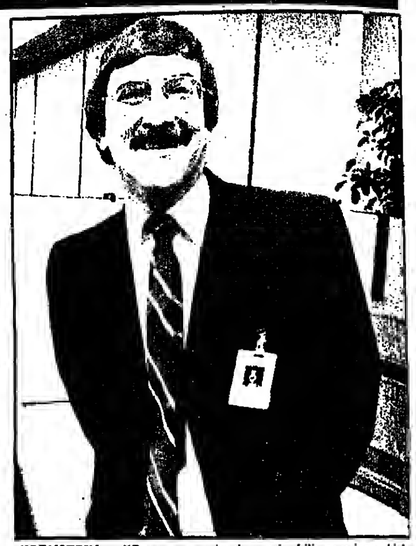
"The major strength of Unix to purchasers of multi-user systems is that it provides a truly portable environment. It handles any number of users equally well; can support user directory structures to any level of differentiation; and is itself highly portable, being implemented for the most part in the high level C language.

"Applications developers have access to a set of powerful development tools, so making the standard of applications software that much higher. And with the current widespread availability of Unix on well over 100 machines from the IBM PC to the Amdahl mainframe, it means that the user can select his software first before making any firm decision on a particular choice of software. Moreover, he can subsequently switch from one machine to another with no costly software redevelopment.

"So why should a purchaser choose a multi-user operating system? The answer is 'Why not?'. The limitation of many environments, CP/M, MS-DOS, to single-user is a software limitation. CP/M was designed for a chip family that was not expected to support multiple users. It is, as its name implies, more a control program than a true OS. Now we have the new families of low-cost chips quite capable of supporting multiple users in the same way as traditional mini processors, so why be limited to a single user any more?"

One answer, begging to be suggested, is: "Why, when chips are now so cheap, make all your users share one, when they could for very little extra have one each?" There is, however, little doubt that Unix scores wherever a computer installation has a computer operator with specialist computing knowledge.

It is not for the microcomputer end-user who has no knowledge nor interest in the finer complexities of computing theory and practice.



KORNSTEIN . . . "Programmers enjoy the cryptic ability to string multiple commands on one line."

TRANMER . . . "Unix is the only serious contender."

SOFTWARE MONTH

Users of micros are unlikely to get the service that other users enjoy, writes David Ferris

Poor outlook for vendor support

MY preceding two articles have dealt with the future support role that DP is likely to fulfil for personal computers, and the level of back-up support DP can expect to receive from its suppliers. Unfortunately, some of the vendor services that are readily available for mainframe and minicomputer products will not be available for micros because of lower prices and margins. This article deals with some major areas in which DP will have to become self-sufficient.

Most personal computers used within corporations take advantage of standard software packages, such as the spreadsheet VisiCalc, or the word processor WordStar. Highly turnkey systems are little used and even such common applications as accounts receivable, accounts payable, and general ledger (UK: sales ledger, purchase ledger, and nominal ledger) receive scant attention.

Hence, many of the problems relate to software packages. Supplier support is likely to be noticeably lacking in package evaluation, post-installation technical support, and user training.

Although micro packages are cheap, corporations like to standardise on a small number, each used a great deal, so an evaluation is worthwhile.

For the vendor offering packages costing $100,000 or more, the lure of cash is a good reason to provide the customer with a high level of technical assistance during his evaluation. But for the next two or three years at least, DP manufacturers will have difficulty in persuading package vendors to co-operate in the sales process as established vendors such as MSA and Cincom do.

These evaluations are not just one-time efforts of drawing up some comparative matrices and filling in the blanks. Users will continually be approaching DP support groups to ask how certain kinds of system should be implemented. Determining the correct solution is not straightforward. For example, at Del Monte – a leading manufacturer of canned foods – the manager of a can manufacturing plant wanted to implement a raw product inventory system. On investigation, it turned out that before very long the applications would be expected to grow into a full-blown MRP (material requirements and planning) system. There is simply no way that an ordinary micro package vendor can afford to participate in this sort of analysis.

Post-sale package support presents further challenges. The first problem is simply getting someone to talk to. Try telephoning many vendors for help and you'll have to hold on for half an hour to get through to a technician, and if you leave a message asking for your call to be returned, responses are rare.

Over the long term, it may get easier, as vendors treat support as a separate profit activity – not just an expensive burden. Sooner or later, service contracts will probably become available. But there will still be major shortcomings in vendor support.

Different vendors offering competing products will not be keen to show how competitive products can replace their own. Consider, for example, the case of a VisiFile user. The user has perhaps built a database of customers using this package, and now decides that he wants to use this with his word processing package, WordStar.

The user wants to use his database as a mailing list, to send out a series of tailored letters with WordStar. VisiCorp is unlikely to be of much help, because it will wish to encourage VisiFile users to use VisiWord as the word processor of choice. On the other hand, MicroPro (supplier of WordStar), would prefer WordStar users to use Mail/Merge, its own database package. Thus competitive forces often hinder the vendor's ability to provide candid assistance.

Each personal computer user will use a number of different packages, each of which will function with other programs in a co-ordinated way. This integrated portfolio of applications will run partly on the user's own personal computer, and partly on other attached processors – personal computers, mainframes, or minicomputers.

For example, it will be common for a user to have database, spreadsheet, graphics, and project management packages on his machine. These will have to work with each other, and the database package will also have to be interfaced with the corporate database running on a mainframe.

Similarly, spreadsheets will frequently be interfaced with a mainframe financial model. An electronic mail package will be connected with co-operating electronic mail systems on other user systems (which will consist of micros, minis, and mainframes).

As new versions of the software component are released, the management of change will become a nightmare, because a multiplicity of interdependencies will have developed. Thus, a new release of a database package for a small

David Ferris is chairman of Ferrin Corporation, a vendor-independent firm which provides personal computer support and training within MIS environments. As a software industry expert, his personal clients include Amdahl, Cincom, Hitachi, Intel, VisiCorp, and Xerox. Based in San Francisco and London, he has an MS in computer science from Stanford University, California.

change in a mainframe financial model will cause hiccups among thousands of users in unexpected ways.

The many varied environments in which the packages work will make the task of problem determination and fixing very difficult, and frequently it will be beyond a vendor's support capabilities.

The provision of support is essentially a professional services business. At root, microsoftware package vendors see themselves as manufacturers of mass-marketed products, rather than as suppliers of highly skilled people. Most vendors will find the prospect of growing a massive support operation singularly unattractive, and difficult.

Communications will be one of the greatest areas of demand for post-installation support. Personal computers will be heavily networked. They typically start as standalone systems, running a spreadsheet or word processor, but they rapidly start to communicate with various other systems.

A wide variety of different underlying data communications technologies will be used to provide the required networking, including local area networks, PBXs, public switched voice and data networks, leased lines, and home-grown networks. The communications protocols used will also vary tremendously.

The next 10 years are unlikely to see really effective communications standards evolved. As a result, there are many ways in which the underlying communications network will run into difficulties, and problem determination and fixing will often be very difficult.

It will often be unclear whether a package is at fault, or whether the communications network should be blamed. For example, a small and unnoticed change in mainframe configuration can cause file control characters to be transmitted in slightly different ways. Thus, files which have been downloaded satisfactorily to a micro database package can suddenly start causing problems. It can be difficult to confirm that there is nothing wrong with the database package, and to determine the real cause of the difficulty.

New software releases are a fact of life, and they bring ripples of indeterminate magnitude in their wake. I doubt that package vendors will be of great help in determining how to correct communications problems.

In two or three years DP will probably have taken up the reins of end-user training. Corporate staff will produce training materials tailored to the organisation's own needs, using its own special examples and language.

Traditional information centre training has been limited to a few people (for example, a mainframe financial modelling package typically has between 10 and 30 users), but many micro packages, such as a word processor, will be used in large numbers. Education of end-users will clearly represent a major area of growth for DP

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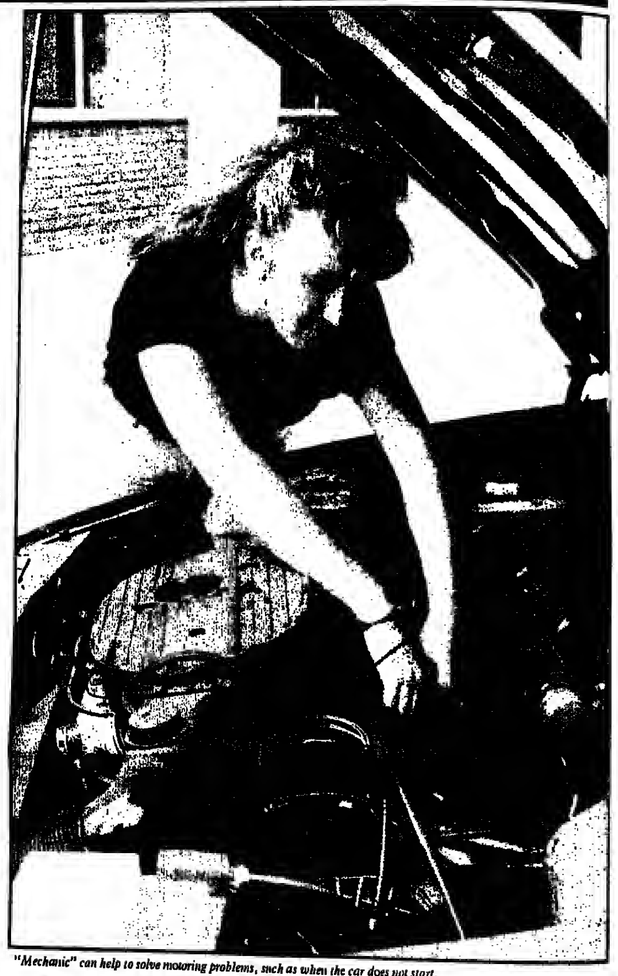
SOFTWARE MONTH

Dr Colin Eden describes how users can argue with an expert system by adding conflicting points of view

A system to help people think about problems



"Mechanic" can help to solve motoring problems, such as when the car does not start.

FOR the past five years a group of academics in the School of Management at the University of Bath has been developing software for combining expertise. Their focus has been on using computer software to help a team of decision makers work on complicated problems – the sort of problems that demand good use of the expertise of each member of the team, and where that expertise is mostly based on experience rather than expert knowledge.

Because the work has been directed to managers and management consultants, it has received scant attention from the artificial intelligence and expert systems field. And yet, as Dr Colin Eden, director of the research, says: "What we have been doing is applying knowledge engineering to practical problems and with the direct involvement of the decision making teams.

"Our software has been used in a large variety of settings, from planning the future in multinationals to a community action group defeating bureaucracy."

So, what are the crucial differences between what they have been doing, for developing their material by working with managers, and the artificial intelligence approaches which have been developed from within academia and the software houses?

Probably the most noticeable difference is that even though they believe they are providing a means of collecting knowledge and making it available to others – indeed they call their software an "ideas management system" – there are no quantitative evaluations made.

Whereas the traditional expert system or knowledge engineer needs to draw out of his expert statements about probabilities and seek to create a stable rule structure; what the Bath people seem to do is encourage their experts to talk normally about the problem from the point of view of their expertise.

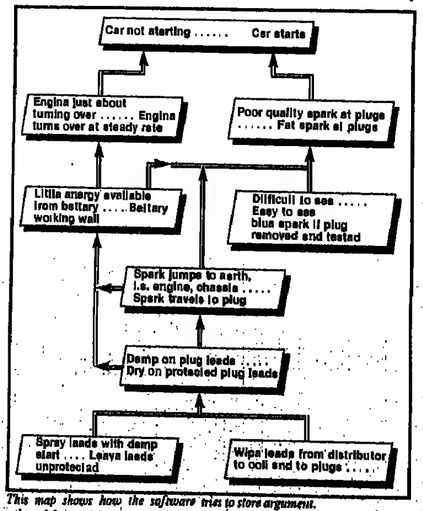
The practical difference is that the Bath knowledge engineer can create the ideas system in the computer as each person talks. Indeed in many circumstances the members of teams talk directly to the computer.

Dr Eden claims that their intention has been to avoid separating input procedures from the output – the user can "argue" with the expertise by adding conflicting points of view, and can explore the expertise in a way that matches his curiosities and personal style.

The Bath knowledge engineer can create the ideas system in the computer as each person talks. Indeed in many circumstances the members of teams talk directly to the computer

The easiest way to get some feel for their approach is by considering an example of using the software in an expert system like setting and then commenting on the different slant.

The team recently built a pseudo expert model for use by colleagues called Mechanic. As the name implies, it is a model designed to help non-technical people solve motoring problems.



This map shows how the software tries to store argument.

The section we shall demonstrate here is concerned with the car not starting.

The structure of the model is best shown with a map of the contents of the part explored with the software (see diagram).

This shows a small portion of the total map of 597 ideas. It shows how the software tries to store argument about how things come to be as they are, and why they matter.

Each arrow on the diagram either represents a forward look at what the consequences of the statement might be or, alternatively, shows a backward look at how it might have come to be. One feature of particular interest in this method of representing the linking of ideas is the way in which the contextual contrast is also set alongside each idea.

The Bath people reckon this feature is important not just for practical reasons to do with storing expertise, but derives from what they think is a crucial body of psychological theory for working on ignition-based systems.

If the user starts his exploration of the model with a query about the car not starting and asks for likely explanations then the output will take the user back down the arrows to a branch point. A possible printout runs:

c516 [this is the user typed command standing for explain idea 516, "car not starting"]

EXPLANATIONS

+516 . . . Car not starting may be explained by
+17 engine just about turning over which can be explained by
+218 . . . little energy available from battery
2
+516 . . . Car not starting may be explained by
+335 . . . poor quality spark at plugs
3
+335 [the user believes that further exploration of "poor quality spark" would be helpful. By exploring the model according to the user's inclinations the expertise can be provided with as much context as the user believes will help his thinking about the problem]

EXPLANATIONS

+335 . . . poor quality spark at plugs . . . may be explained by
+438 spark jumps to earth (ie engine, chassis) which can be explained by
+131 damp on plug leads which can be explained by
–233 [not] wipe leads from distributor to coil& to plugs
2
+335 . . . poor quality spark at plugs . . . is linked to
+536 difficult to see spark if plug removed & tested
3
+335 . . . poor quality spark at plugs . . . may be explained by
+37 contact points set too close together
4
+335 . . . poor quality spark at plugs . . . may be explained by
+238 points are pitted

c233,516 [There are no further ideas available to the user – this is indicated by there being no leading or trailing dots about the new idea.

– the user has thus requested a check on the argument from "wiping leads" (idea 233) to "car starts" (idea 516); that is consequences of 233 for 516]

CONSEQUENCES

+233 wipe leads from distributor to coil & to plugs may lead to
–131 dry or protected plug leads which can lead to
–434 spark travels to plug which can lead to
–335 . . . good spark at plugs . . . which can lead to
–516 . . . car starts

This brief output shows how the user does not follow a completely specified investigation of the expertise in the model.

The software behaves like an easy-to-learn high level language. The designers claim that most managers learn how to interrogate and add to a model within 15 minutes

The user is free to choose the lines of argument that seem most relevant to the problem at hand; it is a bit like being able to read a book by following the ideas that interest you from page 24, to page 36, to page 121, back to page 45, and so on. Indeed the software has been used for the analysis of documents.

It would be quite wrong to imply that the commands listed above are all there is to the software. The software has taken several years to develop and the command structure consists of over 100 options which can be called using brief mnemonics like those above, or by using common phrases such as "find".

The commands can be built into a file in their own right. In this way the software behaves like an easy-to-learn high level language.

The designers claim that most managers learn how to interrogate and add to a model within 15 minutes. Tim Smithin, who currently does most of the system design, says: "Because we spend most of our time out with users, we have been inculcated with a continual monitoring of how they actually interface with the software.

"It has been written so that it can be used by the serious problem solver, not as a toy. The options available mean that the user or consultant can interrogate, change, analyse, answer questions about, or even add to, the model at any time.

"It is designed to help people think about problems, rather than tell them what to do."

As the above example shows, the designers do seem to be totally committed to seeing the "expert" as someone who will bother to explain things, rather than just express a conclusion. Most strikingly they allow the user to add his own growing expertise to the model.

In team problem solving, their intention is to encourage creativity by the continuing interaction of the team members with the model they have each contributed to – a sort of computerised synergy.

In the above example, it also seems significant that the contrasts to the ideas not only express the possible solutions to aspects of the problem, but also have quite definite preventative implications; for example "washing salt off the car regularly", which appears as the contrast to "salt from the road stays on vehicle".

The software discussed on this page is called Cope and is sold as a package primarily for helping with team problem solving. Most have been used for corporate planning or by internal consulting groups.

However, what is interesting about the package is not only that it gets used for a wide range of different topics, but rather that it is used as a report generator (the Bath people use it to help them prepare lectures and papers) for the analysis of qualitative research data, for personal problem solving, for facilitating conferencing at a distance, for collecting and using the views of experts in a large company (such as the economist, political scientist, etc, to help executives think about political unrest in countries where they are heavily invested), for semi-programmed learning, and also for computer consultants to help in software design.

Presumably, there must be other work of this sort going on in business schools which doesn't get seen by SERC or the BCS, or represented at AI conferences. This seems a pity, because the major characteristic of this sort of work is that it gets designed from the clients upwards, which must provide important insights.

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16-bit minicomputers
32-bit minicomputers
word processors

local processing terminals
mainframe computers
encryption
interfaces
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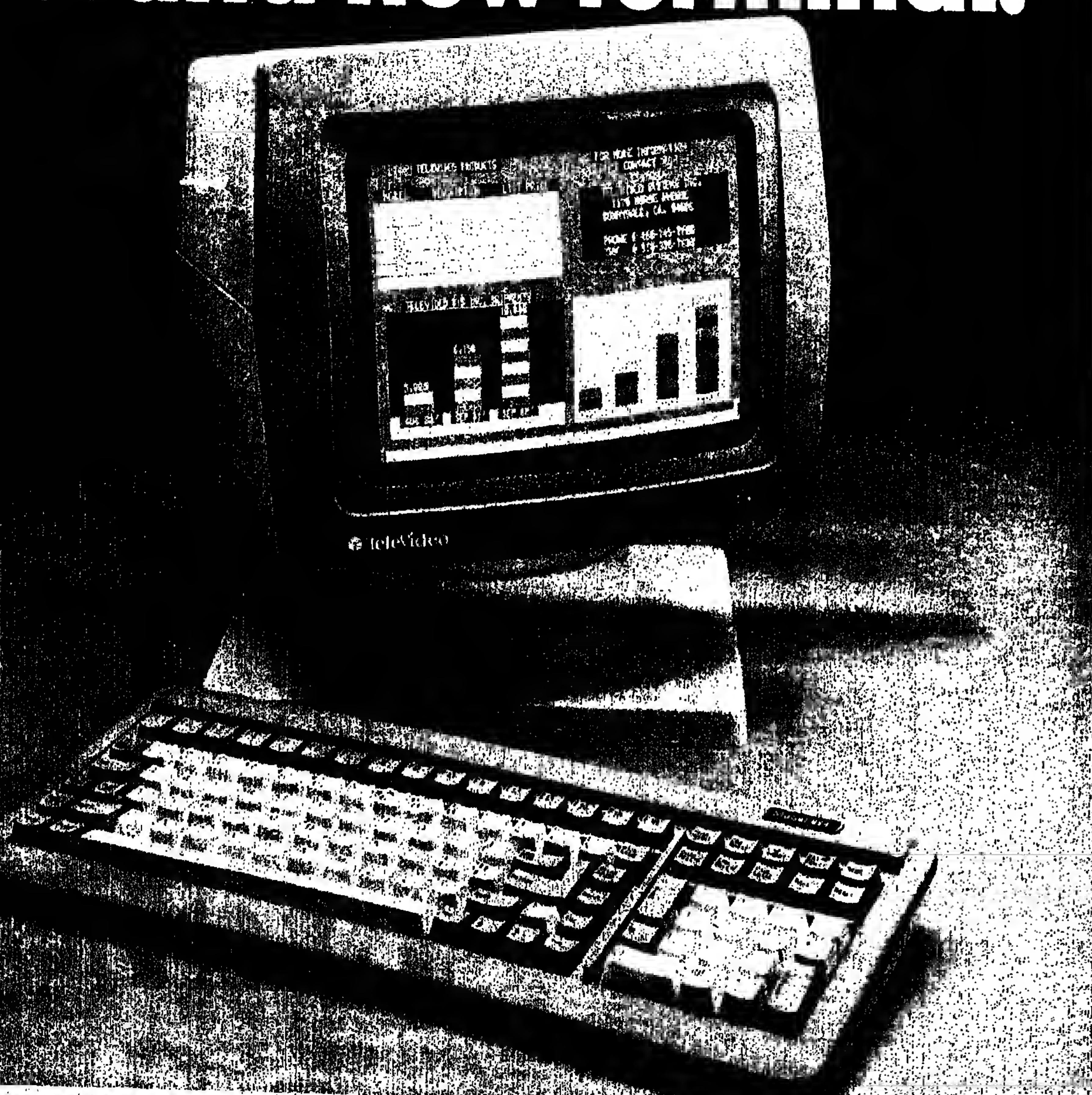

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PROJECT MANAGEMENT

Learn the way of the pharoahs for project success

Keith Baldwin looks at what the ancient Egyptians can teach us

The ancient Egyptians used more stick than carrot, but still co-ordinated and managed an effective workforce.

THE trouble with project management is that the underlying concepts are so relatively simple, indeed obvious, but the sound application of them seems to be so extraordinarily difficult. It would be a rare project manager, even a successful one, who could put his hand on his heart and say he had not violated some of the basic principles on occasions.

Of course, it isn't only applying the concepts that causes problems. When things do go wrong, people (and perhaps especially DP people) tend to fall back on a variety of "sophisticated techniques", computerised control systems or just sheer paperwork overhead.

The thing we need to remember is that projects did not come in with computer systems. Projects have been around for a long time and so there is plenty of history from which to identify the basic principles of successful project management.

No doubt the pharoahs did not consider their pyramid-building efforts to be projects, but that was what they were. They must have been well planned, they certainly had a well defined end product and a well organised team of workers. One or two pyramids might have had problems with change control, but they must have been pretty successful projects.

So what is it that they could do that we so often forget? At its simplest level, it is that projects are about people, not computer programs. Project management is simply a management approach to getting things done. Anything which gets in the way of getting things done has no place in effective project management.

Project management is not project control, it is not sophisticated techniques and it is not management by committee. There may sometimes be elements of the above, but project management is about managing people to achieve a planned result.

The ancient Egyptians may have used more stick than carrot in managing their workforce, but the thing which they clearly succeeded in doing, and where we most often fail when projects go wrong, was in assembling, motivating, co-ordinating and managing an effective workforce.

We can explore these issues a little further by examining the basic characteristics of a project. A project must have a single set of objectives which must be absolutely clear, agreed and quite specific. The project will also have a finite life: they do not last forever. When the end product is produced, the project is finished.

This seems very basic, but it is undeniable that many projects are launched without anybody being too clear about where they are going or, perhaps even worse, launched in two or three different directions at once.

Of course, precise definition of objectives isn't always easy and sometimes the exact nature of the required end product can't be defined. In this case, the answer is: Don't start the project, start a smaller one *first* that will research the ground ahead and define the final end product.

The project team will be a group of people who are organised and directed so that they can achieve the objective. Perhaps the most important decisions in project management concern the organisation and staffing of the project team.

This area, as well as being perhaps the most difficult to get right in the first place, tends to have the most impact on the success or failure of the project and can be the most difficult to put right during the project if it isn't working out.

The need for good people on an important project is obvious enough, as good people generally produce good results. However finding the best 20 brains around is not good enough. You need to have the right balance of skills you will need. Then on top of it all, the people selected must be capable of working as a team.

Organising the team won't be easy either. Should you use a dedicated team for each project or subset of a project, or should you rely on a functional (matrix) organisation? More likely it will be somewhere in between with all the disadvantages (as well as advantages) of both.

But the most difficult part of forming a team will be finding a project manager. A study of the technical, personal and management attributes needed by a good project manager could no doubt fill several articles such as this. Suffice it to say that a really good project manager is a very rare – and expensive – bird.

Even if you have such a person, that alone is not enough. The project manager's position in the organisation must be such that he is not only capable, but responsible, accountable and has the authority to take appropriate decisions. The right person in the right place can transform your chances of success.

> **If project management is not working, adding sophistication will just make the real problems more difficult to sort out**

As for this project plan, quite simply, if you can't plan it, you can't produce it. Despite this there are still too many examples of projects where people wanted to get on with the real work and planning took second place. The results were not usually impressive.

Planning need not require highly sophisticated techniques, though the right techniques certainly have their place, so long as it is done thoroughly. Even a cigarette packet might be appropriate sometimes.

The basic tools required are a pencil, paper for planning charts and a good application of brainpower. The basic ground rules are to think each task through carefully to identify all of its component parts.

Don't use guesswork and make sure that every task has an end product. If it doesn't have an end product, why are you doing it, and how *will* you know when you've done it?

Avoid "end-date scheduling" if at all possible. This technique works by a high enough level of management simply saying "It will be done by the end of August".

This technique does work, as it can concentrate the mind wonderfully and, of course, sometimes it is necessary. However, it usually generates a fair amount of strain along the way, and it is unlikely to produce good results in the long term when teams are moving on from one project to the next.

A project doesn't become a project just by announcing it. Senior management must demonstrate commitment to it by allocating appropriate resources and delegating appropriate authority. They have to show they mean business.

At least as important is the fact that the project will not succeed without the personal commitment of the project manager. He must believe in what he is doing, otherwise *his* troops *will not* be willing to climb out of their trenches and follow him into battle.

Lastly, and perhaps overlooked more than anything else, is the fact that the end product must be for a customer. The project must therefore be directed towards satisfying his needs, not the team's needs, and towards keeping him informed and involved at all stages.

The fact that the project must have a customer can be overlooked in two ways. Firstly, at the beginning of the project sometimes there is no customer so that no one is willing to state that he wants the end product and is willing to pay for it. The result, with computer projects, is the development of a superb system which nobody wants and which will probably never be properly implemented.

Secondly, even if there is a customer at the beginning, this gets overlooked along the way and a communication barrier develops. At the end of the project there is the familiar cry from the customer "but this isn't what I asked for".

A satisfied customer is one whose expectations are met. This can be achieved by agreeing at the beginning what he is going to get, ie defining the end product, then keeping him fully informed along the way. Even better, if he is involved, he might be able to do some of the work.

Establishing effective communication with the customer is one of the project manager's most critical roles. He will be the focal point of all project related communications. That does not mean, of course, that no one else can talk to the customer, but only the project manager can co-ordinate the communication.

Even a passing consideration of the project characteristics described above will show that, if projects are to be managed *effectively*, you need sound management before sophistication and people before programs.

It has often been said that the worst way to sort out a rotten manual system is to computerise it. All you get is a computerised mess instead of a manual mess.

Project management is just the same. If it is not working, adding sophistication will just make the real problems more difficult to sort out, and will probably destroy one of the most critical elements of a project – good communication. If there are problems with project management, the only solution is to go back to basics and apply first principles, no matter how painful.

Keith Baldwin is a partner in the DP Group of Deloitte Haskins & Sells Management Consultants.

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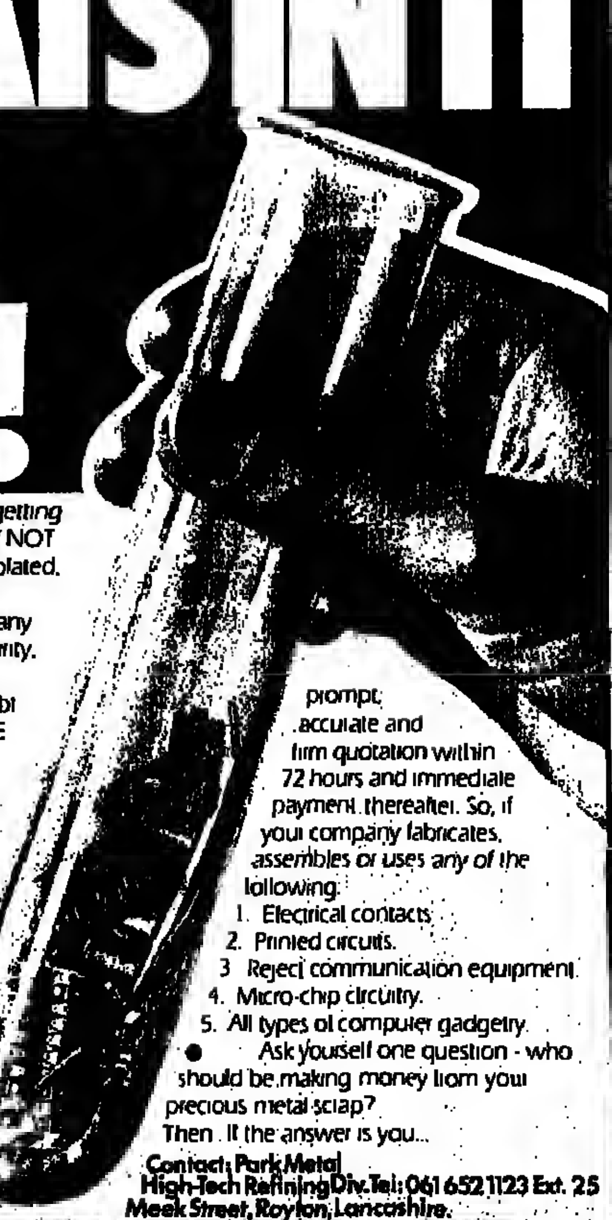

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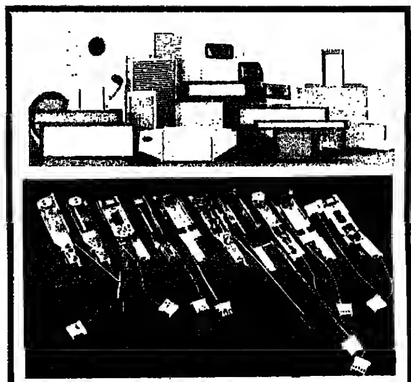

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PEOPLE

■ Premier Computers of Windsor has formed Premier Computers BV, and appointed **Ton J. Litjens** as sales manager. Litjens has spent the greater part of his business career with IBM in development work, product planning and for seven years was a sales manager with responsibility for the banking and insurance sector.

■ **Chris Durnan** has been appointed national sales manager for Wordplex UK, heading a team of over 100. He joins from Datapoint, where he was in major account sales, progressing from salesman to area manager in a few years, and from there to regional manager.

■ Floating Point Systems, has appointed **Roy T. Houston**, as managing director of the Dublin-based operation. He was previously employed by Communics Ireland and Andus Electronic (UK) of Lurgan.

■ Gresham Lion Electronics has appointed **Tim Denslow** as sales and marketing manager for its Video Products Division. He recently joined the company from peripherals manufacturer Penny & Giles Data Recorders.

■ **Sally Smedley** (above) has joined Data Logic as company personnel manager. She is now the company's senior female executive. Prior to joining Data Logic she was personnel manager at Digital Equipment where her responsibility was to provide a personnel service with emphasis on organisation development to the R&D engineering centre.

■ *Wilkins Computer Systems, the IBM system supplier and computer consultancy, has appointed* **W. Kirk MacNulty** *as senior management consultant. MacNulty has technical, management and consultancy experience in a variety of industry sectors, including insurance, finance, manufacturing, fashion clothing, shipping and construction. He is presently concerned with the application of information technology to specific business situations.*

■ Decision Data Computer (GB) has made **Paul Raggett** South-west area sales manager. He will be responsible for marketing the company's IBM plug compatible System/34, System/36 and System/38 peripherals. For the past 6½ years Raggett has been employed by BASF, recently as regional manager, hardware sales.

■ Ashton-Tate has appointed **David Imberg** as managing director, Europe, to develop its marketing and production activities throughout Europe. Imberg joined Ashton-Tate at the beginning of this year as UK managing director, where he has developed a sizeable sales and support team for the five micro software products currently being marketed.

■ Rediffusion Computers has appointed **Ken Mace** as Teleputer dealer salesman to cover the Southern part of Britain. Mace previously spent four years as a dealer manager for ITT CP (UK).

■ Rank Xerox has appointed **Anthony St. F. X. Gerrard** (below) as manager, image processing. He joins from STC Business Systems (formerly ITT), where he launched the Telefax range of facsimile products.

■ Package Programs has appointed **Gordon Mayes** internal services manager. This is a new position created by the company's continued expansion. He will be working on technical projects related to internal communications. Mayes has spent the last 14 years with the Grand Metropolitan Group, recently as commercial manager of the computer bureau.

■ Coda, the Leeds-based supplier of financial software, has named **David Newman** as a consultant. He joins Coda from Digital Equipment, where he was a software consultant for large computer systems. His new role is to support the implementation and further development of Coda's interactive accounting systems for mini and super minicomputers.

■ Softsel has established a Product Services Department and appointed **Susan Lawson** (above) as manager. Lawson has considerable experience in software distribution – she previously ran her own company, SBD Software. Also joining the product services department is **Stephen Trotter**, *formerly with Micro-C.*

■ LA Computer Services, which provides a range of professional and bureau services, has appointed **John Acres** contract services executive. The contract service provides skilled and experienced computer staff to work on client projects under the client's control. He previously worked as a sales executive responsible for Computer Output Microfiche (COM). **Gerald O'Brien** has joined the company as sales consultant dealing with the LA Property Management system. He was previously with Lancing Bagnall as computer manager and ran his own systems firm, Keydata, for several years.

■ *Peachtree Software International has introduced a new licensee account service and* **Dick Campin** *(above) has been made manager of licensee accounts. Before joining Peachtree, he was manager of ICL's Retail Industry Centre. Three account managers have been appointed:* **Lynda Lyen** *(above), who joined Peachtree in September 1982 as a support consultant with responsibility for agents in Europe and the Far East;* **Michael Beonett,** *who joined Peachtree in January 1982 as support analyst; and* **Frank Hoeksma,** *who has joined as licensee account manager from UCSL Microsystems, where he was project manager.* **Belinda Cattermole** *has also joined Peachtree as senior support consultant. She has spent the past two years as a freelance management consultant.*

■ NCR has appointed **Ivor Jenkins** as sales manager, co-operatives and food systems. He joined NCR in 1966 and has held management appointments in research and development, international, marketing and sales, support and marketing.

■ **Gerry Hill** (below) is the oem sales manager at Real Time Development. A former sales and marketing manager at Padmede Computer Services, he joins with special responsibility for UK and European sales of Clearway, RTD's low cost local area networking system.

■ **Bob Brown** has been appointed distributor sales manager by Versatec Electronics, a Xerox subsidiary, and supplier of electrostatic printer plotters. He will be responsible for the sale of Versatec equipment in Europe, particularly in Norway, Sweden, Finland and Denmark, as well as Switzerland and Italy. Brown joined Versatec three years ago as a sales executive in the South-east.

■ Memory Computer has appointed **Fionnula Freeey** and **Barbara Williams** as sales support executives. They will be responsible for providing on-site training for distributors and end-users, ensuring the systems are up and running, answering customer enquiries and giving sales demonstrations. Freney joins from Memory's Dublin parent company. Williams joins the company from Quortz Computers, a microcomputer dealer in London.

■ As part of a plan to see turnover double within a year, GST Distributions, the sales organisation of GST Computer Systems, has recruited **John Gooch** as commercial systems consultant and **James Moriarty** as sales manager. Gooch was the computer bureau general manager at Precision Computer Services, a large printing group. Moriarty worked for DRG Business Machines on a multitasking system with the ability to carry 160 Mbytes of information.

DIARY

SEPTEMBER 12,14

Advanced Fortran 77 is a course for staff with a basic understanding of Fortran. It is run by Control Data, takes place at the Control Data Institute, London, and costs £275. Details: Jackie Barclay, 01-637 2171.

SEPTEMBER 12-15

Advanced IBM Cobol is an Altergo course for programmers with at least 12 months' Cobol experience. To be held in London, it costs £450. Details: Altergo Education, 01-836 9303.

SEPTEMBER 12-15

PL/I Cocollidation is an Altergo course for inexperienced PL/I programmers. It takes place in London and costs £450. Information: Altergo Education, 01-836 9303.

SEPTEMBER 14

ISS Northern Branch is holding a seminar in Manchester on micrographics. Cost is £15 for members, £18 non-members. Further information from A. J. Oulton, (061) 228 6171.

SEPTEMBER 13-15

How to Design and Build DP Internal Controls is a workshop for DP professionals, at the Control Data Institute in London. The fee is £345. Information: Sylvia Lyons, 01-240 3400.

SEPTEMBER 17-21

Structured Fortran is a workshop for personnel new to programming. It will be held at the Control Data Institute, London, and costs £375. Further details from Jackie Barclay, 01-637 2171.

SEPTEMBER 19-20

Network Protocols is being run by Monadnock International Management Development at the Royal Garden Hotel, London. Details: Annabel Hartog, 01-262 2732.

SEPTEMBER 19-21

Network Design is a seminar run by Frost & Sullivan. It takes place at the Mount Royal Hotel, London, and costs £425. Details: Carolyn Budd, 01-486 0334/5.

The Advance Cobol workshop for programmers with some experience in Cobol takes place at the Control Data Institute, London. Cost is £275. Details: Jackie Barclay, 01-637 2171.

SEPTEMBER 20

Seminar on Structured Analysis is designed for managers to evaluate the use of these methods for their own companies. It takes place at the Copthorne Hotel, Crawley, Sussex, and costs £20. Details: Brenda Wigley, (0293) 31211.

SEPTEMBER 20-21

The Status Users Group annual conference takes place at St Peter's College, Oxford. Fess are £45 for members, £55 for non-members. Details: Jim Hetherington, (0532) 737475.

SEPTEMBER 20-22

The Prime User Group conference takes place in conjunction with the Prime Education User Group at Surrey University, Guildford. Cost per delegate is £70 residential, £50 non-residential. Details: Ray Balmer, (0925) 35953, ext 2619P.

CONFERENCE

■ IN ORDER to help its supplier members raise the necessary funds for expansion and innovation, the National Computing Centre, in association with a consortium of City investing institutions, has arranged a one-day conference and associated "Investment market" for Saturday, September 24 at the Hotel Russell, London. Speakers include David Fishburn of the National Computing Centre, Bill Freyenfeld of W. A. Freyenfeld & Associates; Tony Richford of Barclays Bank; Richard Hargreaves of Newmarket Investment Fund; David Murrell of Peat Marwick Mitchell & Co; Ken Philpot of Kitcat & Aitken; and Simon Morris of Guildehouse. The "Investment Market" will contain stands representing about two dozen investment institutions, many of which have arranged hospitality suites in the hotel for private discussions. The delegates' fee of £65 (plus VAT) includes lunch, a programme containing full details and services available through members of the consortium and a copy of the NCC guide, *Financing for Information Technology*. Further details are available from Philip Virgo, Technology Assessment Services Manager, National Computing Centre, London EC4.

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HEWLETT PACKARD

A potentially lucrative market is provided by Britain's 52 police forces. But while there is no standard, it's a risky business, writes Paul Walton.

The police: a big new market for systems — but not an easy one

TEN years ago few police forces had any direct experience of using computers, apart from using the town hall *data processing* department to do the wages.

Today, most of the 52 police authorities in the UK have been initiated into computer use. Most aspects of policing are either being considered for computerisation, or have already been computerised, although the extent of computer use varies across the country.

Computers are now used to help trace fingerprints at New Scotland Yard; to investigate traffic accidents on the M1 motorway; to track the killer of children such as five-year-old Caroline Hogg and 11-year-old Susan Maxwell; or simply to put through a routine 999 call to the appropriate local police station.

There are major benefits to be gained, for police work is highly labour-intensive. Since the Bow Street runners first expended all that energy keeping the streets of London relatively safe, the clerical and administrative side of policing has mushroomed. The modern bobby *spends hours* writing reports and searching through records.

But there are disadvantages for the public if computers are used indiscriminately. The Data Protection Bill soon to be given its final reading in the Commons, has brought the issue of police use of computers into sharp focus (see facing page).

There are 43 police authorities in England and Wales, including the Metropolitan Police in London, and nine forces in Scotland and Northern Ireland. The Home Office, which is directly responsible for the Metropolitan Police, puts up half the capital costs of the other forces and has a major say in what computers are used for. But its role is advisory — it cannot direct a force to buy computer A, or to install system B.

The police first began to use computers directly in the early Seventies. Along with the government, the National Health Service and other public sector bodies, the police began trials with common systems, which were then expected to be widely used.

The first two independent police computers were installed in Birmingham and Glasgow between 1973 and 1974, and these forces (now enlarged to form the West Midlands and Strathclyde authorities) have maintained a lead in the development of new systems.

The market for police computer systems is big, according to Arthur Isaac, who specialises in it at Honeywell's marketing unit. While it is impossible to put a price tag on it, one can get some idea by considering the major elements now being bought.

The cost of a system depends, largely, on the size of the force. The Metropolitan Police is a 26,000-strong force, policing a population of several millions.

There are several other large authorities, such as Greater Manchester, West Midlands and Strathclyde, with forces of over 5,000. Most county forces have between 3,000 and 4,000 men and women, and there are a few smaller ones, with between 1,000 and 3,000.

All these forces are potential customers for four major systems.

Isaac outlines what these are, and what they do. "The police market breaks down into a number of operational systems. First and foremost is administration — doing things like sophisticated personnel, fleet management (of police cars and the like), general office automation and some financial, like the fixed penalty parking ticket for instance.

"Next comes command and control, which we are very strong in (Honeywell installed one of the first for South Wales police authority). This has the job of recording incidents as they come in, as 999 calls or whatever, and of deciding who should attend to them. It deals with management reporting of efficiency and responses, the overall control of resources, message switching and interactive links made to the PNC.

"There is also crime information. This system deals with the handling and storing of details on convicted criminals, details of outstanding crimes to be solved; and lost and found property. It is possible to enquire about information held on the file without knowing about it in detail.

"Lastly, there is the criminal intelligence system, where the information held is not wholly factual, and where what you might call speculative details are held on people who may not have a criminal record, but are suspected of having committed a crime."

Isaac said that Honeywell sells all these major systems on its DPS-6 minicomputers (as well as on some mainframes and microcomputers), along with more specialised pieces of software, such as the Major Incident Room Index and Action Management (Miriam).

Miriam has been hurried into action by recent public concern, following the lengthy Yorkshire Ripper case, where the police found it difficult to deal with large amounts of information held by several co-operating forces.

Honeywell's sales literature describes Miriam as a tool to aid the old manual card-index approach to major crime investigation, where different operational policies can be set to suit the incident.

The powerful heart of the Miriam software is its use of the Status free text retrieval package. Status will allow records to be searched, with incomplete names or descriptions. This allows significant connections to be made in an enquiry, and suspects to be thrown up more efficiently.

Essex police has taken Miriam, and with the Home Office will evaluate it for national use. The high cost of the system may mean that it will eventually be a national service, like PNC, or that smaller microcomputer derivatives will be offered to some forces.

In response to the interim need for an incident system, the Home Office has recently recommended a microcomputer software package which it commissioned after the Yorkshire Ripper was caught. The murders highlighted the positive benefits which police computing could have for the general public.

Police forces are at different stages in the purchase and development of standard computer systems like these, but by the end of this decade all will have them in one form or another. Patrick Mayhew, Junior Home Office minister with special responsibility for the police revealed the current state of play in answer to a written Parliamentary question from Labour MP Michael Meacher, last February.

Mayhew said that nearly half of the 43 police authorities in England and Wales were either using, or planning to buy command and control systems. He also revealed that a third of these authorities were using, or planning to use, computerised criminal information systems.

Meacher also asked: "What is his [Mayhew's] role in approving the function of the computer in each of these cases, and what independent discretion do chief constables have in deciding which of these types of system is required?"

It is important to note that Meacher's question specified both criminal information systems (straightforward recording) of data, and the more controversial criminal (or local, qualitative) intelligence systems.

The Home Office ducked Meacher's distinction between criminal information and intelligence, saying that it did not distinguish between the two. In answer to his question about accountability to Parliament for the precise function of a police computer, Mayhew replied that no specific approval was required — it was up to the local police authority.

But Mayhew added: "The [Home Office] provides guidance as appropriate, and is involved in research and development work."

The Home Office has, to a large extent, let the police get on with computerisation. There have been three joint computerisation projects to date, with a fourth about to begin. The police have used a group of 10-12 systems houses and major suppliers to work out what they would do, with the Home Office looking over their shoulder by virtue of the grant it makes towards capital expenditure.

Isaac said that, while the front-runners are now planning more sophisticated replacement some police authorities are just beginning to use their older specifications to save time and money in catching up.

The Home Office and the police forces are not well equipped to develop systems. New computer applications are often re-writes of specifications already in use. There is a lack of research.

Most policemen and women use computers, but few help to design systems. The Police Research Services Unit draws two chief superintendants from each authority, and they get a chance to work with computers on two-year secondments.

The Assistant Chief Police Officers (ACPO) organisation is responsible for promoting standards, and monitoring developments. It works with the Home Office in gathering information, which is later circulated to all the forces. A report on the Thames Valley intelligence Project is going through the mill now. It will be circulated as advice, and with some general guidance on how to proceed. It will be for local police authorities, and the local councillors, to decide how to proceed.

The Home Office does have one special Scientific Research and Development Branch (SRDB), which looks at new solutions. It is currently active in the promotion of standard specifications for the four popular systems, as well as looking into the application of more microcomputers (to save money), and private viewdata (to share information).

The main suppliers are Honeywell, Burroughs and ICL, and a host of minicomputer-makers. Distributed computing is popular with police authorities, which have to cover large areas and operate online for most applications.

Most police computer systems are specified by them, but implemented by systems house on a turnkey basis. Here the suppliers include Software Sciences, Systems Programmers (SPL), Logica, Lesco, IAL and CAP.

While there is big money to be made, there are difficulties with police systems. Systems houses often agree to build ambitious projects, using another force's basic specification, without realising the degree of tailoring needed or the time this will take. SPL is believed to have complained to the Home Office after losing between £500,000 and £2 million implementing a system for Northumbria police.

To get a foothold in this prestigious and lucrative market, systems houses have rushed the design stage, and have been lumbered with fixed price contracts.

More evidence of the difficulty in building police computer systems comes from Software Sciences' recent £3 million order from the Kent and Humberside forces, which are working together with the Home Office to try to bring together many state-of-the-

■ Continued on page 35

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BYTE Magazine June '83: "Alion packaged as a house-cat!"

Big new market for systems

■ From page 34

art features.

The Home Office said at the time: "We are looking at the possibility of a national standard. This specification might well be accepted by other forces, but that is what we have got to see," the spokeswoman added.

Software Sciences has just won a second order, from Merseyside police in Liverpool, to build an advanced command and control system. But there will be no criminal intelligence system in the Merseyside order, despite its inclusion for Kent and Humberside.

Merseyside police dropped the crime reporting option, which was to gather qualitative information, before the event, to get its new system through Liverpool's Labour controlled police committee.

Software Sciences is designing both sets of police computers (dual Burroughs mainframes in both cases) along the same guidelines, but dropping the criminal intelligence option for Merseyside police.

Standards may be set by the Home Office, but they can be overruled by the local police authority.

There are often strong political influences on local police authorities. When the Home Office decided to exempt the police from inspection under data protection legislation, the Association of Metropolitan Authorities (AMA), which is labour controlled, said that it would take on the job, informally.

Last April, the West Midlands police chief, Sir Philip Knights, announced that he would not be allowing his data — gathered and held on a new £3.5 million system — to flow on to the Police National Computer (PNC). Thirteen police forces have direct links to the PNC; Sir Philip was the first chief constable to abstain.

The West Midlands police force, pushed to some extent by the local Labour administration (where Councillor Edwin Shore is chairman of the AMA's Police and Fire Committee, which made the independent audit pledge), became the first to go for a voluntary police code on what information to use and store.

Sir Philip, speaking at the time about the force's wish to abide by proposed data protection laws, said: "It [the criminal information system] will not contain information that is not factual, or relevant to the aims and objectives of the system." He added that no links to the PNC would be made either.

These two contracts are worth about £3 million to Software Sciences. Both use state-of-the-art hardware and software.

The police are likely to spend near £100 million on advanced systems by the end of the decade, according to Isaac. This will come in waves of replacement and the introduction of what standard specifications now exist. He gave this estimate for a county police force, about to build all four common systems from scratch.

Command and control, the heart of operations, would need a dual processor, online communication with tens or hundreds of peripherals, such as printers and VDUs. It would cost about £1 million complete.

Criminal information is more difficult, as there are not many packages around, and the software needs a lot of tailoring. It could cost at least £2 million, and would have a very large amount of disc (or, in the future, more intelligent and accessible) store.

Criminal intelligence systems have so far been limited in the UK to the Thames Valley experiment. The cost of such systems is likely to start at £1 million and increase according to how sophisticated a picture of the local community is being prepared.

The administration system, having to hold detailed records of staff and resources availability in real time, is more expensive. It would cost from £80,000 on a Honeywell system, using the same hardware.

Hard-pressed local authorities have got to think about spending in the region of £4 to 5 million for police computing. More will be prepared to do so, Isaac said, as the crime figures continue to rise, and as computerised systems already installed begin to show their worth.

Big Brother fears as data banks expand

Police computers store information on victims as well as criminals. Links with other data banks create fears of intrusion into privacy.

THE Hendon-based Police National Computer (PNC) began to offer its records service to the local forces in 1974. Soon 24 forces will have a direct interface to the PNC. It is also linked to the Driver Vehicle Licensing Centre, which has a daily dump of data held on magnetic tape, soon to be replaced by direct connection.

But the Home Office has consistently denied that any other government systems are linked to the PNC.

Police use of computers has been dogged, rightly or wrongly, by a Big Brother image. Many people fear that more connections between the various Government systems, including those used by the police and the armed forces will lead to an Orwellian situation.

Criticism has been directed at a joint Home Office and Honeywell experiment to install a criminal intelligence system for the Thames Valley police. This system will be 10 years old next week. It goes well beyond the traditional clerical and administrative use of computers.

In criminal or local intelligence gathering the police store and refer to information about the population *before* an offence has been committed. It could be dubbed preventive policing.

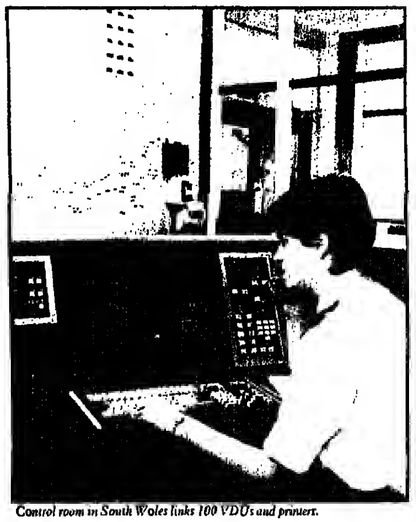
The PNC is the police's own master index, and the most comprehensive register of crimes in the UK. Since 1974 it has developed services for dispensing information on stolen and suspect vehicles, vehicle owners, fingerprints (in collaboration with the special unit at Scotland Yard), criminal names, wanted and missing persons, and disqualified drivers, and cross references all this information.

While PNC literature claims that "the system has been designed to ensure the integrity of all data held on these indices, and every precaution is taken to guarantee the security of this information against unauthorised access," its critics say that it is being used to monitor more than just stolen cars or missing persons.

In the Technical Authors Group (TAG) pamphlet *Police use of Computers* it is explained that police forces linked into PNC carry out far more vehicle searches (often 40 or 60 times more) than the numbers of stolen vehicles reported missing. TAG concludes that the PNC is used to help what the police call "low level intelligence gathering".

In 1979, one-third of all police forces were interested in criminal intelligence, much of it gathered from PNC. TAG criticises the development of local intelligence gathering facilities using the PNC data, without the accountability of a data protection Act.

TAG, and other civil liberties groups argue that the police should not extend computerisation or use the excuse that they are only interested in operational data before there is such an act to allow people the right to challenge information about them.



Control room in South Wales links 100 VDUs and printers.

Honeywell terminal used with the South Wales Iris system.

The Home Office has revealed that there were over 40 million entries on the PNC index on April 3 this year — more entries than there are adults in Britain.

The Home Office's major intelligence gathering experiment at the Thames Valley police headquarters in Oxford — the Intelligence Project — has recently been extended. The collation of information on non-criminals takes place on a huge database. Victims, as well as their attackers, find their way on to the files.

Critics have attacked the security and accountability of the Intelligence Project, arguing that it increases the amount of speculative investigation while the police undertake. There is also fear of political or racial bias finding its way on to the records. Information certainly seems to flow one way — on to but seldom off the Thames Valley system.

While the public may benefit if known criminals can be kept track of by either of these applications of sophisticated computer systems, there are dangers that negative aspects of policing may become more apparent. In other words, innocent people may unwittingly find themselves on file.

The Data Protection Bill is a watershed for police computing, as the moral issues will now be thoroughly debated. The Police defend their computers in much the same way that they defend their general reputation.

The costs and benefits of police computing are explained in a Honeywell brochure outlining what it offers to this the growing market. "The modern police force can be looked on as a large-scale business enterprise, offering services on the one hand and incurring costs on the other," it asserts. The service is law and order, while the costs are rates and taxes. Honeywell, one of the biggest suppliers of computers to the police, does not discuss the moral issues.

The debate on the Data Protection Bill provides an opportunity for an appraisal of police accountability. The Lindop committee, set up to consider data privacy, concluded with relation to police use of computers: "We believe, therefore that the best way to avert any fears and suspicions of such systems would be for them to be subject to the data protection legislation we propose."

But after much prevarication, the Minister responsible for police and the security forces at the Home Office, which will appoint the Data Protection Registrar, ignored the Lindop recommendation. The police are to be exempt from the Act and free to gather whatever information is useful for their operational use.

While the Home Office is believed to be preparing some plan for police accountability to the Registrar, this will probably be merely a code of practice, issued to give guidelines to the local police authorities.

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BOOKS

Bell rings true to history of the century

Power of Speech, A History of Standard Telephones and Cables 1883-1983. Peter Young. George Allen & Unwin. £9.95.

IT SHOULD have been possible for a reasonably far-sighted person, on January 1 1900, to guess which organisations would be dominant, even after an unpredictably volcanic century, 100 years onwards: Bell would have been a safe bet. It would be possible, certainly, to tell the history of the century in terms of Bell and not miss a lot out. This, on a small scale, is what Peter Young has attempted here.

STC began as an arm of Bell's manufacturing partner, Western Electric. The difficulties of persuading the Post Office are legendary. He doesn't actually quote the well-known phrase "No use for your invention, Mr Bell", but that attitude is implied.

Culture clashes adorn the story of the phone, embodied in the statue of the telephone cherub in Temple Place. The Brazilian Emperor cries: "My God, it talks!" Then J. E. Kingsbury, ambitious youth, derives some benefit from stale sermons by using them to acquire shorthand.

By the 1920s, however, we are already into the familiar world of big business, large contracts and accusations of unconcilatic bias.

The firm became STC when Bell sold it to ITT in 1925 and Kingsbury resigned. The great slump that began with the crash of 1929 hit it far harder than the second slump of the late '70s. The company made a loss in 1932.

Employees then felt as grateful to the boss, Tommy Spencer, who saved them from having to march from Jarrow, as their modern counterparts might do at being saved from Toxteth or Brixton. High job security left little enthusiasm for trade unions.

The Woolwich workers were dispersed in the Second World War to Somerset and Leicestershire and the company grew fast. Those who were left in London were visited by Churchill amid the bombing.

The dead hand of the Post Office continued to affect STC through the 1950s and slowed its progress in telephone exchanges. The late '50s was the time when relying on the Post Office induced complacency, gaining technological superiority but not exploiting markets. Profits were "ungentlemanly".

ITT headhunted Geneen from Raytheon to put things right. He did: he introduced STC to five-year plans and to computers.

But STC was still in no great shape when it narrowly escaped nationalisation by Tony Benn in 1970 – Lahour's election defeat rescued it.

Kenneth Corfield, who was brought in that year to put the firm back on the right road, had the same motto as MSA's John Imlay: "Stop doing what loses money and start doing what makes it." He axed ruthlessly, dragging STC kicking and screaming into the electronic era to compete with GEC and Plessey.

While parent ITT was getting a bad press for its role in Chile in collusion with Nixon, offspring STC was trying, under Corfield, to learn to be a better employer.

Last year, which saw ITT's stake drop to 35%, also saw STC drop out of System X, a decision which has yet to be proved sensible or otherwise.

Those who will enjoy this book are staff and ex-staff, people whose imaginations have been fired by convergent technologies or the recabling of Britain, and Cecil Parkinson.

George Black

"It's from head office asking how the R&D project is going."

Ideal reading for the novice programmer

Data Processing and Management Information Systems. R. G. Anderson. Macdonald and Evans, Plymouth. £4.50.

DATA Processing and Management Information Systems is a sensible, practical guide to all aspects of business computing, using down-to-earth examples such as payroll and stock control systems.

It makes ideal reading for new programmers or for managers installing their first computer. It describes computer systems not in terms of binary and the inner workings of the processor but instead in terms of data flow from the accounts office to data preparation, file updates and output to disc and reports.

All aspects of introducing a computer and developing an application are covered in a no-nonsense way, including lists of organisational considerations, likely data fields and the analysis, flowcharting and programming of the problem.

Different types of processing and peripherals are described and there are chapters on bureaux and software services.

The book has the feel and layout of a handbook, with sort chapters split into brief sub-sections. This makes it easy to find passages on any aspect of data processing. There are also many line drawings and diagrams.

The weakness lies in the fact that this is the fourth edition of a book first published in 1974 – there are far too many anachronisms. There is heavy emphasis on punched cards and paper tape. The ancient ICL 1900 Executive is held up more than once as an example of an operating system. Mainframe consoles are called electric typewriters. And the section on bureaux refers to COSBA, an organisation which died many years ago.

Other failings include emphasis on only two manufacturers: ICL and NCR. Sections on private viewdata and digital telephone exchanges, for example, suggest ICL is the only supplier.

Despite these failings, this book has much sensible instruction to offer in its 480 pages.

John Kavanagh

Brevity pays off in Fortran choice

Problem Solving with Fortran. Larry Nyhoff and Sandford Leestma. Macmillan Publishing (US).
Fortran 77, A Top-Down Approach. Nonna Kiss Lehmkuhl. Macmillan Publishing (US).
A Course in Programming in Fortran, Revised to incorporate Fortran 77. Valerie J. Calderbank. Chapman and Hall. £5.95.

CRITICS of the Fortran language complain that it is inelegant and an awful mess of conflicting features. For its fans, the language has become a bold effort to be all things to all programmers.

The latest state of the language is called Fortran 77, and this week we have three books to review on the subject.

Top of my pile is a US publication, *Problem Solving with Fortran 77*, which gives a comprehensive coverage of the subject, but I found it largely unreadable. Useful no doubt as a reference book, it fails to make its impact as a tutor or bedside companion.

Perhaps its appeal is not helped by over-liberal use of bold type and italics, and often poor layout of diagrams and sample programs.

The book makes a case for Fortran as a language suitable for commercial as well as traditional scientific applications, and rightly gives plenty of space to the new character and file handling facilities.

But the exercises I found somewhat pedantic and boring, and it is frustrating that the interesting questions are not answered at the back of the book.

Fortran 77, A Top-Down Approach is another US publication, and this I found clearer, but again not really suitable for a cover-to-cover read. However it does make an attempt to take the reader into the language from first principles starting with a discussion of peripherals and processors and coming on to problem solving techniques in Fortran.

This second book tends to focus more on numerical applications of the language than the first, but does have a useful section at the end on advanced use of input and output facilities such as variable length record treatment, and direct file access.

My favourite of the three, is the only one written in the UK, *A Course on Programming in Fortran, revised to incorporate Fortran 77*. Perhaps I like it best because it is the shortest, running to just 183 pages, compared with 352 for the first book, and 466 for the second.

Certainly this last volume does not look exciting, and the type used seems to jump from standard to italic and back again without rhyme or reason, and without contributing to the clarity of the text.

But I like the no nonsense, terse treatment of the various language facilities, also the exercises, which mainly consist of writing programs, with suggested solutions listed at the back.

More advanced language features are left out, and non-numerical applications are rather neglected. But then I suppose that brevity and completeness are not wholly compatible.

Philip Hunter

Beware the legal traps when buying a system

Understanding Computer Contracts. M. Edwards. Waterlow Publishers, London. £6.50.

PURCHASING computer systems is full of legal traps for the unwary, particularly when it comes to computer contracts, as neither the law nor the lawyer has yet come to terms with the grey areas opened up by information technology.

The purpose of this book, written by a commercial lawyer, is to guide the buyer through the legal jungle and at least draw attention to the main pitfalls awaiting the unwary. In its 121 pages, the book focusses on the legal implications of hardware purchase, software licensing, maintenance agreements and bureau services, but also covers a comprehensive range of other areas connected with buying a computer system.

Edwards succeeds in these aims to provide a clear, digestible guide for the busy manager and also gives a useful checklist of the key points he has to consider at all stages – from negotiation to decision, from contract to litigation.

The book certainly succeeds in putting the legal frightener on potential buyers, encouraging them to seek legal advice – solicitors' guides to house purchase come to mind – but it does not discuss average proportional costs, or at what stage it becomes cost effective to consult a lawyer. It also gives no advice on how to choose him.

These criticisms are particularly relevant, as the book highlights two worrying situations: the "overall inadequacy of the legal reaction to the new technology which causes concern" is one. The inexperience of lawyers with computers and related law is the other. The book draws attention to the many legally hazy areas, especially in software.

Software is the most fuzzy area for the lawyer – and likely to be the most expensive. Intellectual property law, which is taught in few law schools, is in a state of flux anyway, and intangible software creates even more problems. Software and, even more, firmware present unresolved problems with both patent law and copyright law.

Edwards offers the chill warning that "the lack of case law and legislation in the UK means there is a widespread lack of specific computer expertise among lawyers".

A major point the book makes is that buyers should not be mesmerised into buying a computer system without studying the small print, and that they should be prepared to negotiate terms.

Even without contacting a solicitor, the reader gets a good flavour of the most blatant catch-all exclusion clauses that are likely to appear in contracts, and has fair warning of the complexity of co-ordinating contracts when several services and companies are involved in the purchase of one computer system.

If the book only draws the attention of the computer industry to the inherent weakness and lack of support it gets from the legal system, it will have provided a major service. But it is also likely to go much further than that and become required reading for all buyers of computer equipment.

John Riley

Networks call for better illustration

A Managers' Guide to Local Networks. F. Derfler and W. Stallings. Prentice/Hall, Hemel Hempstead. £12.70.

The aim of this book is to enable managers considering computerisation to "hold their own with the experts and would-be experts". This the text does more effectively than the presentation, with liberal use of similes and analogies, although the balance between simplicity and technical complexity is not always consistently held.

The most lucid and readable chapter is the one on technical fundamentals and standards which, ironically, is that sort aside for "optional reading".

The six-page, tabulated comparison of the benefits and drawbacks of different ways of recording and retrieving information will also be particularly valuable to the book's target readership.

John Riley

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PRODUCTS

PDP-11 micro with built-in Winchester storage

HAWKE Electronics, the Digital Equipment distributor, has announced the Micro/PDP-11 microcomputer. Prominent among its features are built-in Winchester storage and versatile packaging.

This fully-fledged PDP-11 is designed around an enhanced LSI/11/23 CPU and provides the basis of a low-cost, multi-user PDP-11 microcomputer system with the support of a broad range of microcomputer software.

Included as standard is 10 Mbytes of built-in Winchester storage, with an 800 Kbyte removeable dual minifloppy.

It also has 256 Kbytes of main memory and features 22-bit addressability.

The component parts of the Micro/PDP-11 are complete in one enclosure which is available in a choice of three packaging styles. This allows the unit to be either rack-mounted or positioned on, or under, a table.

Hawke Electronics (CW), Amotex House, 45 Hanworth Road, Sunbury-on-Thames, Middlesex. Tel: 01-979 7799.

The MicroPDP 11 from Hawke Electronics.

Control system takes the biscuit

AN advanced quality control system has been installed at United Biscuits' Tollcross, Glasgow factory by Process Computing. The system, which has taken nearly two years to develop, features a series of PCL Micro Manager single-board computer modules. With a DEC PDP-11 host computer, these provide comprehensive monitoring of output from five UB biscuit production lines.

The installation is the first stage of a major project which will eventually result in the computerisation of 11 of the packaging lines at Tollcross.

Based on a specially-adapted DEC PDP-11 with 96K core memory and additional 18 Mbyte Winchester disc storage facilities, the system is capable of producing detailed management reports and can show simultaneous trend comparison of up to three different parameters. Data can be stored for four generation of printed reports and the computer is able to maintain records on hourly, shift and daily production.

Records are maintained for two weeks on a shift basis and 48 hours on an hourly basis, for immediate recall on a screen or printer.

Each of the five packaging lines is equipped with one of the PCL Micro Managers. These units, based on the recently-introduced DEC Falcon SBC-11/21 computer, have been developed by PCL to provide low cost and accurate computerised control throughout the production or packaging process.

Full colour Imecolor VDU terminals and function only keyboards are also provided, allowing line operators to view the system's colour graphics displays by making only a single key depression.

The Micro Manager units are housed in wall-mounting enclosures installed close to each production line.

The PCL system has been designed so that each Micro Manager acts as an intelligent satellite of the host computer. This means that the units provide continuous local monitoring of each line.

Process Computing (CW), Waslow Road, Harlesden, London NW10 7NY. Tel: 01-961 6466.

Line operators can view the Process Computing system's colour graphics displays by making a single key depression.

Kennedy launches a tri-density tape system

KENNEDY has introduced the Model 9400, claimed to be the first low-cost tri-density tape system which features data densities of 6250, 1600 and 800 cpi and offers the ability to store up to 180 Mbytes of data in GCR format while maintaining compatibility with PE and NRZI recorded tapes.

The Model 9400's modular design provides for easy interface to a wide range of controller interfaces, including the Picobus interface, says Kennedy.

The tri-density system operates at 45 ips in the GCR mode, with an average transfer rate of 281 Kbytes per second. Tape speed for PE/NRZI formats is 75ips at a data transfer rate of 120 Kbytes per second for PE format and 60 Kbytes per second for NRZI format. The tape system has full start/stop capability with on-the-fly operation and full edit capability.

Built-in data buffering allows the tape systems to operate at reduced transfer rates to provide interface compatibility.

The Model 9400 is designed to achieve maximum reliability. The GCR format has two track error correction.

On power-up or master reset the 9400's on-board processor initiates extensive verification of each subsystem in the drive and the servo system may be tested offline.

Kennedy International (CW), McGraw Hill House, Shoppenhangers Road, Maidenhead, Berks SL6 2QL. Tel: (0628) 73939.

The Model P400 tri-density tape system from Kennedy.

Portable datacomms terminal

THE RCA Model 745XT is a data communications terminal offering portability, and plain-paper capability.

The terminal is designed to handle a variety of applications from TWX/Telex communications and electronic mail to automated distributor networks and sales force automation, according to James H. Bell, manager of data services product marketing.

The unit measures 14 x 12 x 4½ inches and weighs 12 pounds with carrying case.

The 745XT features instant database access, offline editing, direct distance dialling, standard phone jack or acoustic coupler hook-up, standard typewriter keyboard, 14 alternate print fonts, 16K RAM capability, and 80 or 132 column formats.

Another major feature is the economy of plain-paper printing, and Bell claims that the 745XT can be 50% less expensive to operate than thermal paper printers.

RCA's lease/service package for the 745XT starts at $60 a month.

RCA Service Company (CW), Route 38, Cherry Hill, N.J. 08358. Tel: (609) 338 6437.

Twinlock's new open access storage frames.

Open access storage for computer media

TWINLOCK has extended its Multi-Stor range with open access storage frames and a new design of chassis combining both shelf and suspension storage.

Designed for locations where ease of access is paramount, the range starts with a basic 42in. unit which can be extended horizontally, vertically, or made into a gondola, with units connected back to back.

The range can be used for storage of all types of computer media, as well as for traditional lateral filing. A single 75in. unit will hold a full five rows of 11in. deep computer printout binders.

It is designed to co-ordinate with Twinlock's Multi-stor range in chocolate and cream and will accept metre-wide Multi-Stor cupboard fittings as well as the new shelf chassis.

The new chassis fits all the Multi-stor range of cupboards and combines shelf storage with Crystal Lateralfile of printout binder storage in one fitting, reducing the number of different chassis required for multi-media storage.

The open access storage units are easily assembled, says Twinlock, and screw-in adjustable feet cope with slight inconsistencies in floor levels. The kits are supplied with illustrated instructions and an allen key for quick assembly. Multi-Stor fitments including spare chasses and shelves which clip on to the brackets supplied are available separately.

Prices start at £91.44 for the basic 42in kit, which includes two sets of brackets.

Twinlock (CW), 36 Croydon Road, Beckenham, Kent BR3 4BH. Tel: 01-650 4818.

Sophisticated software

A NEW release of an RSX-11 compatible data acquisition and control software package has been announced by Data Translation. RSXLIB Version 2 adds support for LSI-11 compatible, programmed I/O, analogue input and analogue output devices available from both Data Translation and Digital Equipment Corp.

Previous versions of RSXLIB supported DMA data transfer devices from Data Translation for both LSI-11 and PDP-11 (Unibus) systems.

RSXLIB is a sophisticated, general purpose software tool designed for laboratory research and industrial/factory automation where data acquisition must take place in a real time, multi-tasking, multi-user programming environment.

The RSXLIB package consists of a set of drivers which may be loadable or resident, a configuration command file and a library of over 30 re-entrant subroutines.

Data Translation (CW), 430 Bath Road, Slough, Berks SL1 6BB. Tel: (06286) 3412.

Graphics for DECwriter

A VECTOR Graphics enhancement for the LA-120 DECwriter III is announced by Selanar. The SG120V add-on features high quality graphics while not making any changes to the LA-120 and retaining all the existing alphanumeric capabilities. It offers the user the Selanar Graphics native mode for vector drawing and the 4014 Tektronix emulation command structure with the ability to dump the graphics back to the CPU.

While communication between SG120V and LA-120 is preset at a chosen baud rate, the baud rate to the host computer or modem may be selected with DIP-Switch.

The field installable graphics add-on enhancement for the LA-120 sells for less than $1,000 list price. Resolution of the SG120V is 165 dots/inch x 72 dots/inch.

Selanar Graphics' UK distributor is Datatrade.

Datatrade (CW) 38 Billings Road, Northampton NN1 5AW. Tel: (0604) 22289.

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BYTE Magazine June '83: "A lion packaged as a house-cat!"
hp

Sabre's printer has 16 columns

A 16-COLUMN matrix printer has been added to Sabre Computers' Ultra Compact Printer family.

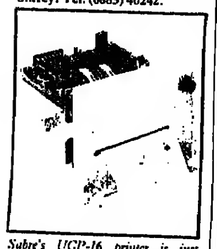
The new UCP-16 is 80mm wide, 68mm high and 75mm deep. It runs at 17 characters a second from a power supply of just five volts.

Like the earlier UCP-24, the new unit has a 64-character upper-case set and accepts serial and Centronics parallel data.

Other features include graphics, self-testing and the ability to print characters in different sizes. The mean time between failures is put at 500,000 lines.

The standard price is £99 – or "a lot less" to systems builders ordering large quantities.

Sabre Computers International (CW), 60 High Street, Caterham, Surrey. Tel: (0883) 40242.



Sabre's UCP-16 printer is just 80mm wide.

Industrial micro hits UK

A RUGGED industrial microcomputer is now being sold in the UK by a new company, Data Beta, formed to develop and market industrial control and automation products. The microcomputer, called the Muse, is made by Morgan-Smith Electronics, a specialist in analogue and digital instrumentation systems.

Muse consists of a Motorola 6809 processor, a 58-key keyboard, a 16-key keypad and a 320-character display. Different types of random-access and read-only memory can be added, depending on the application.

Standard analogue interface cards are available for up to 33 channels, while 24 sockets are included to accommodate optically-coupled solid-state input and output modules.

RS232 and 20-milliamp current loop serial interfaces are also provided.

The unit is contained in a tough, waterproof housing. It can be used in damp, dusty or otherwise hostile conditions.

Muse is designed for use on the shop floor both as a stand-alone machine or as an intelligent terminal.

Data Beta (CW), 23a Buckingham Avenue, Slough, Berkshire SL1 4QA. Tel: (0753) 75933.

Mail houses can reduce list costs

A LIST management system called AnaData has been introduced by TDP, the Coventry software and systems house. The company claims AnaData gives users powerful list-handling techniques previously available only on large computer systems.

For handling lists of 10,000 to 10 million records, says TDP, AnaData's interactive flexibility – as distinct from conventional batch processing – can make it significantly less expensive than other in-house or bureau systems both in equipment and operational costs.

On the Post Office rebate scheme alone, TDP quotes probable savings, for a user negotiating a 33% rebate, of about £155,000. This is based on a twice-yearly mailing to 1.5 million customers.

One of AnaData's main features is its de-duplication facility. Compared with existing systems, AnaData is said to be capable of saving £75,000 on de-duplication costs, again based on a twice-yearly mailout to 1.5 million customers, and an all-in unit cost for the direct mail piece of 50p. Such a saving is calculated on a list containing only 5% of duplicated records.

On mailings of this size, the system could pay for itself in four months.

An AnaData system is designed to be used in a normal office environment and using existing staff. Only the simplest training is required to create and update information.

There is no need to put special editing symbols into names and addresses for the computer to interpret the position of key words. Entries are typed in response to simple questions in plain English.

The system does not depend on the use of a post code in a list, so names and addresses can be recorded with or without one. If a post code is entered, then AnaData will check that it is correct.

When the post code is known, it can be entered before the name and address. The required town and county names will then be displayed automatically on the operator's screen. This saves typing some 25 characters and avoids the town name being misspelled or the wrong county name being used.

AnaData can also produce accurate and topical reports, enabling management to evaluate trends and incorporate results in more efficient planning.

Records can be produced as hard-copy reports and the use of Report Writing modules allows the system to select particular records or fractions of files and keep a record.

The system can print file directories, summaries and management information at many levels. Complex reports can be pre-specified and subsequently used in standard report-writing runs.

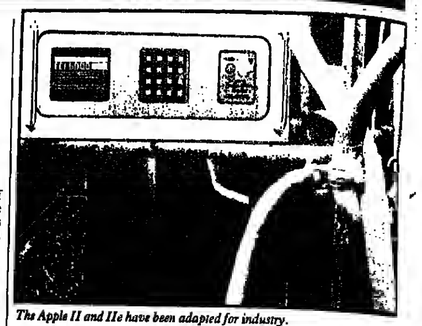
AnaData is based on hardware by Texas Instruments from its Business System range introduced last year.

The equipment ranges from the Business System 300, a multi-user system with 128 Kbytes of memory, expandable to 512 Kbytes, to the top end of the Business System 800 series, providing up to 450 Mbytes of on-line disc storage.

The entire system is operator friendly, the operator being able to revert to simple helpful instructions when meeting with any particular difficulty.

Cost of a typical AnaData hardware and software system is in the region of £25,000.

TDP (CW), 7 The Quadrant, Coventry, West Midlands CV1 2EL. Tel: (0203) 26788.



The Apple II and IIe have been adapted for industry.

Suiting Apples to industry demands

FLEXITALLIC Controls has adapted the power, ability and cost of the standard Apple II and IIe to the demands of industry.

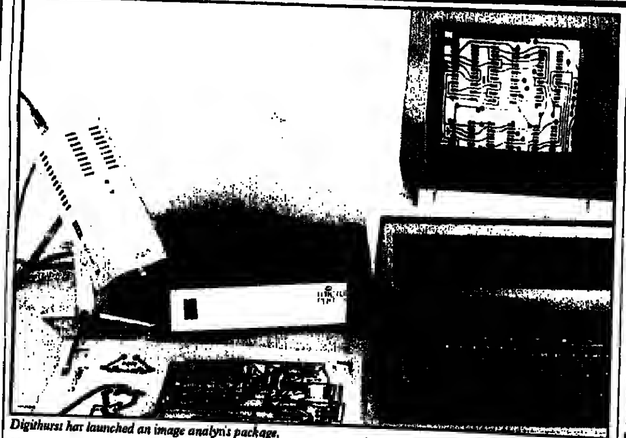
No unreliable or vulnerable magnetic discs or tapes are used. The unit incorporates a solid state board and is housed in a dust- and splash-proof cabinet with VDU and keypad built into front panel.

One version, FCL 6000, meets IP65, the standard for control equipment, and is claimed to be ideal for data acquisition analysis and control applications in aggressive industrial and laboratory situations.

FCL 6000 can be programmed directly using a separate, plug-in full keyboard. Alternatively software can be developed offline and plugged directly into the computer. It is compatible with all Apple Support Cards.

Three versions are currently available. FCL 6000 is housed in either heavy gauge 16 SWG or an all stainless steel cabinet, and FCL 6010 is rack-mountable.

Flexitallic Controls (CW), Dell Rood, Rochdale, Lancashire OL12 6BZ. Tel: (0706) 343438.



Digithurst has launched an image analysis package.

Image analysis enhanced

DIGITHURST has launched an image analysis package to run on the Sirius microcomputer. The package is an enhanced version of Digithurst's MicroSight I Vision System.

The enhancements include an increase in resolution to 256x256 pixels and the use of recursive filtering to reduce the effects of random interface experienced with video cameras.

The MicroScale image analysis package has also been implemented on the Sirius and allows the user to manipulate images by moving and expanding sections of the screen, as well as the usual features such as dimensioning and area perimeter measurement.

Applications include input to CAD; graphic design, image analysis, forensic analysis, low cost medical imaging and cartography.

Costs are £495 plus VAT for MicroSight I and £295 plus VAT for MicroScale packages.

Digithurst has also released a colour version of its MicroSight I Vision System for the BBC and Apple micros.

The package, which allows coloured images to be captured and displayed on the micro screen and also stored on disc is intended for computer aided learning and graphic design applications of MicroSight.

The colour version uses a filtering system on a black and white camera and is also being offered as an upgrade to existing users of MicroSight I packages.

The colour version of MicroSight is £595 plus VAT, which includes software, documentation, vision interface and camera.

Digithurst (CW), Leaden Hill, Orwell, Royston, Herts SG8 5QH. Tel: (0223) 208926.

Hand-held terminal has total of 38 keys

DATA BETA has been selected by Intertek Inc of Japan as exclusive UK agent for a new hand-held terminal, the Profort 801.

This tiny terminal is functionally equivalent to a standard VDU and differs only in the size and keyboard layout, says Data Beta. The 801 can display two lines of 16 characters on its LCD screen, and a full 128 line display memory (2,048 characters) is included in the unit.

Data Beta recommends that small alterations to the sections of the program that handle screen formatting be made to take full advantage of the device.

Keys allow the user to move the window, formed by the LCD display, through which the actual screen is viewed, so that the whole screen stored in the display memory can be seen by scrolling through it.

The terminal has a total of 38 keys which will generate the full Ascii character set and control codes as well as certain dedicated commands.

The Profort 801 is equipped with an RS232 port operating at all standard speeds between 50 and 9,600 baud.

Both 20mA current loop and TTL outputs can be supplied as an option.

The terminal weighs 400g, and measures 184x94x36mm.

Applications for the Profort 801 include field maintenance, testing and factory control where a normal VDU would not be practical because of its size and weight.

Data Beta (CW), 23a Buckingham Avenue, Slough, Berkshire SL1 4QA. Telephone: (0753) 75933/4.

The Profort 801 hand-held terminal.

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EDP's continued growth within the Commercial and Financial sectors has led to the need for additional Analyst/Programmers.

You will have a minimum of twelve months ICL COBOL Programming experience preferably using ICL ME29 hardware. In addition, you should demonstrate initiative, self-motivation and the ability to work under pressure.

At EDP, you will be engaged in a development role which will include a variety of real-time and networked systems for ICL ME29 and TORCH microcomputers.

You will be given the opportunity to diversify into new exciting areas including UNIX and C development.

Find out more – phone Knight on 01-491 4706 quoting ref: YY170

EASTERN DATA PROCESSING LTD

Programmer/Analyst

West London c£11,500

Our client is a privately owned and well established company with representation worldwide whose business is taking reservations for a series of hotel chains.

Their London based Data Processing department is currently replacing existing time sharing services with a distributed network of micro and mini computer systems to be operational worldwide.

In order to meet the demands of further long term plans, our client is seeking a self motivated individual who can demonstrate a high degree of programming skills coupled with some exposure to the design of commercial applications.

The successful candidate must have the confidence to learn a variety of programming languages across a broad spectrum of hardware.

Among the exciting aspects of this job is the opportunity for foreign travel. To find out more contact Knight on 01-491 4706 quoting ref: RC317.

Knight
Confidential Reply

Real-Time Software Development

(Leisure software micro computers)

Central London c£11,000 + Bonus

Our client is engaged in the development of an exciting range of software products encompassing the computerisation of popular board games for 8 and 16 bit micro computer systems.

They offer an excellent opportunity to enter a new and rapidly expanding industry at ground floor level.

As a senior member of a team utilising state of the art real-time software techniques you will be actively involved in the following development areas:

* **Voice recognition/synthesis**
* **Animated graphics**
* **Games strategy**
* **Educational software**

Candidates will have a minimum of two years experience of low level language usage on micro computer systems. A working knowledge of micro computer hardware and systems software will be an advantage.

For an early appointment phone Knight on 01-491 4706 quoting ref: RC318.

Leisure Genius

Programmer/Analyst

N. London c£9,500 + benefits

Tektronix UK Limited is part of an international manufacturing company with subsidiaries located throughout the world. Tektronix designs, manufactures and markets a wide range of electronic equipment for all sections of industry, research and commerce.

Their North London computer centre houses a VAX 11/780 supporting a variety of commercial applications.

The Programmer/Analyst will be initially involved in major enhancements to Transaction Processing and Ledger systems.

Candidates will have a sound COBOL programming background with some analytical skills and should be able to demonstrate self motivation and the capability of liaison with users. A knowledge of VAX hardware under VMS would be a distinct advantage.

Find out more – phone Knight on 01-491 4706 quoting ref: YY181.

Tektronix
COMMITTED TO EXCELLENCE

Analyst/Programmer

City £ Negotiable + Mortgage Subsidy

The Data Processing department of this leading Merchant Bank utilises a wide range of PDP 11/70 hardware to develop Banking and Investment applications under AIMS.

The Analyst/Programmer will be a member of a team with principle responsibilities to analyse new systems and develop, install and maintain computer programs.

Candidates will have a minimum of eighteen months experience as an Analyst/Programmer gained in a Banking and/or AIMS environment.

The office premises are modern and pleasant and situated in a central position with easy access to the Home Counties.

You will be offered a competitive negotiable salary with an excellent benefits package that will include a subsidised mortgage scheme.

Find out more – contact Knight on 01-491 4706 quoting ref: YY180.

Knight
Confidential Reply

Knight

Knight Computer Services Limited
(Recruitment Division)
14 Old Park Lane, London W1Y 4NL

Licensed as an Employment Agency

01-491 4706 24 Hours

HUNTERSKIL
The Hunterskil Group

COMPUTER MANAGERS
To find out more about advertising in this feature, contact Neil Williams on 01-491 4706

Best Viewing

THURSDAY tv — **Sept 8th 1983**

10.55 BBC TV

If you think this advertisement bears an uncanny resemblance to a page from a well known magazine, you're absolutely right.

But instead of telling you what's on, it's here to tell you what's *in* — what's in a career for you with the BBC at Television Centre.

You can look forward to variety, a stimulating environment and the chance to work with other professionals — providing vital computer services to all areas of television, including on-line video and film libraries, programme costing and transmission, artists' contracts, Breakfast Television and BBC Enterprises Ltd.

11.30 Project Analyst

c£12.5K (staff), c£14K (contract)

To take responsibility for project management. Must have at least 4 years' experience at System's Analyst level, preferably gained in an ICL VME/B environment, and on TP applications.

12.00 Systems Analysts

c£11K (staff), c£12.5K (contract)

Minimum of 2 years' as a Systems Analyst. Preferred experience to include one or more of the following: ICL VME/B or DRS, Harris, Hewlett Packard.

12.30 Analyst/ Programmers

c£10K (staff), c£11.5K (contract)

At least 3 years' experience at Programmer level. ICL VME/B COBOL or George III COBOL essential.

1.00 Programmers

c£9.5K (contract)

Minimum 2 years' ICL 2900 COBOL programming experience, preferably using DRS.

1.30 Contract Posts

Where a contract salary has been quoted, the contract will be of 2 years' duration and is not pensionable, but otherwise attracts the same benefits as a permanent position.

2.00 Benefits

In addition to the attractive salaries, there is a generous 5 weeks' holiday entitlement and opportunity for career advancement within data processing.

Staff may join the BBC Club where there are attractive bars and lounges, with subsidised lunches or snacks and a whole variety of activities, ranging from Amateur Dramatics to Badminton, Golf to Squash and Table Tennis to Yoga. There's a lively social atmosphere and you're encouraged to use as many of the facilities as you wish.

9.30am-6.00pm Contact

To find out more about any of these posts, initially please contact Linda Berry on 01-576 1693/1393 who is waiting to talk to you between 9.30am-6.00pm, or write to her for an application form to BBC Centre House, London W12 7RJ indicating which post you are interested in.

BBC tv

15324

We are an Equal Opportunities employer.

FOR SOMETHING A LITTLE DIFFERENT . . .

If your Sales or Marketing career to date is perhaps a little run of the mill, one of these positions could offer a welcome alternative.
Currently our Sales and Marketing Division are handling some 60 assignments for similar "characters", these are just four.

INTERNATIONAL SALES EXECUTIVE – MICROS

Central London Base — **£24k Package**

Experienced Sales Executive required to develop new business for our client overseas. Proven track record required in DP/WP selling directly or through distributors overseas.
Age range is likely to be 28-35 and applicants must relish a start up situation. Business acumen combined with drive and technical expertise are essential attributes.

SALES OPPORTUNITIES SUPER MINI MANUFACTURER

S. England — **On target earnings £24k**

A leading 32 bit computer manufacturer is seeking to expand its salesforce. They require in particular, individuals with experience of Office Automation, C.A.D. or distributed data processing. Ideally you should have a proven sales track record, but pre-sales systems analysts wishing to move into sales should also apply.

SALES ENGINEERS MASS STORAGE DEVICES

Home based
North of England & S. Home Counties — **On target earnings to £18k**

This peripherals supplier needs two experienced sales people to sell Disc Drives and Controllers to Microcomputer companies throughout the UK. The ideal background would be experience of selling peripherals in a similar environment. Applicants must be highly self motivated and willing to exploit the large geographical territories involved.

SALES SUPPORT CONSULTANTS SOFTWARE HOUSE

Middlesex — **£15-£18k**

The Professional Services Division of our client requires consultants with 10 years' plus experience in D.P. This should have been gained in a sales or sales support role with a software house or a manufacturer. Experience of IBM, HP, DEC or ICL hardware is preferable as well as Database systems.
Consultants need to be highly motivated individuals who can contribute effectively in the pursuit of major new home business.

Please telephone David Jones to discuss your career potential on Lewes (07916) 71271 or write to him at the address below

The Electronics Recruitment Company
Temple House, 25/26 High Street, Lewes,
East Sussex BN7 2LU. Tel: Lewes (07916) 71271

15304

WE'RE LOOKING FOR COMPUTER PERSONNEL WHO WANT TO WORK ON CONTRACT

If you are thinking of going contract or if your current contract is ending soon **we would like to hear from you.**

PFS was established 18 months ago as services and consultancy subsidiary of the Euriban Group. We are currently providing project teams, consultancy and individual computer staff to some of the country's leading companies to work on the various installations of differing manufacturers systems throughout the United Kingdom.

If you wish to be associated with a growing and respected company please send your c.v. or telephone the following:

Neil Dennis
or Yvo Henneker-Heaton
PFS Computing (UK) Ltd.
Barker Gate House
Belward Street
Nottingham. NG1 1JY.
Telephone: 0602 580935
Or Derek Wadham at:
Thatcham (0635) 66923.

pfs Computing (U.K.) Ltd.

Project Facilities Services

European Offices in Nottingham, London, Birmingham, Frankfurt, Brussels

15309

X25 Network Control

Your move to a rewarding career in a major networking project!

The Company: Our client, a large and successful computer manufacturing company, is about to embark on a major new project to control one of the largest high-speed networks in Europe. Based in the attractive Hertfordshire green belt area within easy reach of London, the company has an outstanding track record in communications development. The work is challenging and will suit motivated professionals who seek a rewarding career.

Comms. Consultants
to £18K.
To be responsible for design studies, system design and sales support activities on general networking and communications projects. Candidates should be able to show at least 8 years experience of the computer industry, including the design and installation of communications networks and extensive client contact at the highest levels.

Team Leaders
to £14K.
To carry out systems design and to lead a team of programmers on the implementation of projects arising from such designs. There will often be an element of client liaison in these positions.
We require at least 6 years experience, including the design and installation of systems with some communication content and responsibility for development staff.

Senior Programmers
to £11K.
Successful applicants will design and implement systems software under the guidance of the team leaders and will supervise the work of programmers within the team. At least 3 years experience is required which should include involvement in the successful implementation of a significant project.

Usual large company benefits including relocation assistance where appropriate.

Evening & Weekend telephone numbers:
Terry Harvey – Gt. Missenden (02406) 4705
Brian Coates – Chesham (0494) 785722

HR **H. R. Associates Limited** HR
Executive, Computing and Technical Personnel Consultants
57a Hill Avenue, Amersham, Bucks. HP6 5BX Tel: 02403 28383
London office: Regent Street, W1

MOVE WITH US TO NEWBURY

Our client is a young and expanding company with a reputation for offering quality single and multi user turnkey systems to government departments, national and multi-national companies. Their new exciting range of interactive software products are based on 8 and 16 bit micro computer systems, running under CP/M, MP/M, MS-DOS and UNIX.

Due to their outstanding success they are relocating to new headquarters in Newbury, and are looking to employ several young, energetic individuals whose desire is to work for a small but highly successful organisation.

SALESMAN
Circ 18K + car

We are seeking to recruit a salesman to sell high volume desk top and multi-user computer systems, both to larger organisations and to first time users. The emphasis is placed on providing system solutions, and not merely hardware sales. There will be no defined territory, although it is envisaged that the majority of business will be generated in the South of England.

The candidate will

- *have two years sales experience in office products or computer systems.*
- *be between 20 & 30 years of age.*
- *have the ability to develop the sales & marketing activity of this progressive company with the guidance of the Sales Manager.*

If you are an energetic self starter who is looking to progress his career by joining a successful expanding company please call Barbara Allen at our Reading office.

SENIOR PROGRAMMER
To £12K

We require a Senior Programmer to take responsibility for a team of programmers and provide an interface between this group and the board of directors. This demanding and responsible role requires:

- *Two years + COBOL, preferably, but not essentially on minis and micros.*
- *Sound software development skills in a commercial environment, including some analysis and design.*
- *A strong self motivating and enthusiastic team worker.*
- *The ability to grasp fundamentals of accounting and management information systems.*

This exciting position offers the opportunity to participate in a company with high growth potential, personal development and career progression.
For further information please contact Keith Taylor at our Reading office.

PROGRAMMER
To £10K

An energetic self startor is required to complement our young and expanding development team. Systems will be based on a wide range of micro computer systems, operating systems, and database management systems. Skills required are

- *one or two years commercial programming COBOL*
- *some analysis exposure*
- *ability to work as part of a close team*
- *adaptability to changing circumstances and requirements*

This is a real opportunity to enhance your career prospects and work in a challenging but rewarding environment.

For details of this post please contact Keith Taylor at our Reading office.

The main benefits will derive from working for a company whose drive and enthusiasm is coupled with a highly professional attitude and excellent product range. They offer exciting challenges and ground floor opportunities to become an integral part of a successful and expanding company.

مكانا من الأصل

MCL **McCOURT COUSINS LTD.**

27-29 Greyfriars Road,
Reading, Berkshire
Telephone (0734) 595346 (24 hours)

Chesham House, 150 Regent Street,
London W1R 5FA
Telephone 01-439 6288

DALROTH

NETWORK MANAGEMENT SOFTWARE
PROTOTYPE DEVELOPMENT PROJECT

Can you . . .
★ DESIGN & DELIVER WORKING SOFTWARE
★ CONTRIBUTE IN AN AREA OF EXCELLENCE
★ PLAY YOUR PART IN GROWING THE COMPANY
★ JUSTIFY A SALARY UP TO £15,000

Are you . . . Capable of investigating methods of Network Management and Control; designing and developing a tool that will enable your team to deliver software for a new concept of Network Management.

You must . . . Have a good degree and experience in the design and development of REAL TIME COMMUNICATIONS SYSTEMS.

Ideally you . . . Would have experience in any of the following:
★ PACKET SWITCHING
★ LOCAL AREA NETWORKS
★ MESSAGE SWITCHING
★ GATEWAY EXCHANGES
★ PRIME, PDP, VAX or TANDEM

The project . . . Is based in The West on client premises, though later some development may be brought in-house (also in West).

The positions . . . are for both:
TEAM LEADERS AND TEAM MEMBERS

The company . . . Offer an ideal opportunity for enthusiastic and well qualified professionals to enhance both their own and the company's reputation at home and abroad.

For further information, please contact Jenny Dalrymple-Hay or Ian Murray Wast on 01-493 2947, from 8am to 10pm Monday to Friday or weekends Ian Murray West on Milton Keynes (0908) 663415 quoting Ref. 5002.

DALROTH & PARTNERS LTD, 4 HALF MOON STREET, LONDON W1 ● TEL: 01-493 2947

(5338)

SENIOR SALES
£27,000 ON TARGET . SIERRA 2.0GL

A doubling in T/O to over £33m and a fourfold increase in trading profit are the rewards reaped from commitment, investment, professionalism and hard work for this UK supplier of major systems.

They have succeeded in establishing an enviable customer base with household names in oil, finance, retail and distribution, manufacturers and the public sector. 1984 will see the development of this, including the addition of several new major names.

Quality has been their hallmark in service and in the selection of their existing Salesforce, all of which are earning in excess of £40,000 p.a. Their growth now depends on further investments in strong sales professionals with a track record in DP Sales and with the motivation to take them above the competition.

If this opportunity interests you – phone Norman Wright, Ref: NS.159.

AB EXECUTIVE (WEYBRIDGE)
(0932) 41321

8100

PERM-NEG. TO 10K — SHEFFIELD

SENIOR ANALYST
SENIOR PROGRAMMER
SENIOR ANALYST/PROGRAMMER

Minimum of 5 years' experience to include:

★ IBM Mainframe OnLine Systems
★ Manufacturing/Production Control
★ Project Planning/Estimating
★ Minis/Micros/Networking (an advantage)

To work with a highly skilled team developing systems, using advanced DDP techniques based on a network of minis (IBM 8100) and micros (CIFER, RAIR, PS) interlinked to the GMS DATA CENTRE (IBM 3031).

GMS Computing Limited
Smithfield House, Blonk Street, Sheffield S1 2BU
Tel: 0742-730191. Quote DDP/JC

(5388)

GMS

DISABLED LIVING FOUNDATION

Analyst/Programmer

An exciting and prestigious post in a national information service on disability

Applications are invited for a new post with the Disabled Living Foundation's Information Service for one year with possibility of extension.

The duties of the post will be concerned with the start up and development of a computer-based PDP 11/23) information storage and on-line retrieval system where knowledge of databases will be relevant. A secondary task will be to extend the use of the computer in administration of the Foundation's work. The project has attracted funds from the Department of Industry.

Salary: £9,000-£10,000.

Application form and further information from: The Director, Disabled Living Foundation, 346 Kensington High Street, London W14 8NS. Telephone: 01-602 2491.

(5339)

URGENT CONTRACTS

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VAX/FORTRAN/ARBAT	NOW
VAX/FORTRAN/INFO	NOW
WANG/COBOL	NOW
BASIS/DATABASE	NOW
UNIVAC 90/30 COBOL	NOW
HP3000 COBOL	NOW
RAMIS (COBOL OR PL1)	NOW
PDP11/RSTS/BASIC (PARIS)	SEPT/OCT
METIER/ARTEMIS	SOON
PRIME EXPERT	NOW
IBM/FORTRAN/O.R.	NOW
TECHNICAL WRITER	OCT

MONTREAL ASSOCIATES (SYSTEMS) LTD.
01-553 2944 (4 lines) emp. agy.
98-100 HIGH ROAD, ILFORD, ESSEX IG1 1DS

(5401)

GLC
Working for London

Computing Co-ordinator
£11,880-£13,353 inclusive

This position is within the Central Support Group of the Scientific Services Branch, which provides a consultancy service for other local authorities and public bodies as well as other Council Departments.

The Branch makes considerable use of mini's and micro's and links into the Council's IBM 3081 mainframe for data analysis, scientific calculations and information storage and retrieval. It is also the site of a Department of Industry sponsored office automation trial, involving some 40 Rank Xerox workstations.

The Co-ordinator will be required to anticipate and assess the Branch's changing needs and recommend how these should be met, and to assist users and liaise with suppliers and the Council's Central Computer Service. Widely based experience in computing is essential. Good communication skills and the ability to deal sensitively with staff at all levels are also important.

Reply to: Director-General's Department, Ref. 139, Greater London Council, Room 202, The County Hall, SE1 7PB or telephone 01-633 2390. Closing date. 23rd September 1983.

The GLC welcomes applications from all sections of the community, irrespective of an individual's sex, ethnic origin, colour or sexual orientation and from people with disabilities who have the necessary attributes to do the job.

(5223)

SENIOR APPOINTMENTS – £14K +

Information Systems Controller

New Appointment

CITY

Salary c.£35,000, car, benefits

for the leading division of a major international financial institution.

Responsibility is for computer services inclusive of DP, OA, WP, Telecommunications, and the strategy planning and development of a broad spectrum of information systems in pace with new technology, and user demand.

The requirement is for a seasoned information systems professional with a demonstrable portfolio of successful achievement in meeting complex business information needs via advanced technology in a major financial or commercial environment. A proven ability to communicate positively and objectively with user management at all levels, and manage the implementation and introduction of totally effective systems is vital. A university degree is essential.

Please send a fully detailed and comprehensive, handwritten or typed, CV and listing application systems and related hardware, software, staff resources in chronological order, to ANTHONY SPURR, Manager, Executive Selection Division, quoting reference number GW1147 at the address below.

(6296)

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-633 0866

BIS Applied Systems

WHAT COMES FIRST
PRODUCTS OR PEOPLE?

With Ericsson the answer is both. By always putting people first, Ericsson has established some of the most user-friendly products in the world.

Ericsson also has the financial backing and the R & D resources to maintain the lead in the race to meet the world's rapidly developing demand for communications and information processing systems. A demand that requires a further increase in staff so that the best products continue to have only the best sales and service teams behind them.

Ericsson Information Systems Limited—part of the international telecommunications giant and pioneer of ergonomically designed terminals and data products—has won universal acclaim for its advanced, highly versatile products, many of which have been designed for compatibility with other manufacturers' equipment. An example is the Alfaskop multi-function workstation. Over 100,000 have already been installed world-wide with the majority connected to IBM computers.

By the end of the decade Ericsson Information Systems aims to be the leading supplier of office technology and information processing systems in the world. Its recently acquired Facit Data Products Division is already established as a leading supplier of terminals and printers to the OEM market place.

This lead can only be maintained with the right people. The kind of dedicated staff that see the value in investing their future in a rapidly expanding company, and of course in the rewards to be derived from that success.

Continued profitable expansion has resulted in the following opportunities for exceptional sales executives in the Business Systems, Communications, and Facit Data Products Divisions.

BUSINESS SYSTEMS SALES EXECUTIVES
£25,000 + per annum

Experienced Business Systems Sales Executives are required for our marketing operations based in Birmingham, Bristol, London and Stockport. Qualified applicants will have at least two years proven success in selling computer-based business solutions to top management in more than one industry. It is unlikely that anyone under 25 will have the technical and business acumen that we are seeking. An income package will be in the region of £25,000 + per annum.

COMMUNICATIONS SALES EXECUTIVES
£23,000 per annum

Two experienced Sales Executives, with proven track records in selling communication equipment, are required to further develop the penetration of Ericsson products into the U.K. market. The current product line includes a full range of communication and networking components, X25 packet switching systems, electronic mail and telotex. The income package will be in the region of £23,000 annum.

FACIT DATA PRODUCTS—OEM SALES EXECUTIVES
£20,000 per annum

Unprecedented growth in the OEM sales and support area has resulted in the creation of three new opportunities for experienced OEM Sales Executives to be based in Birmingham, London and Rochester. Qualified applicants will be experienced in the successful sales to and support of large OEM accounts. The income package will be in the region of £20,000 per annum.

Qualified candidates should apply in writing by sending career details to Mike Bateson, Marketing Director, Ericsson Information Systems Limited, Swan Office Centre, 1508 Coventry Road, Yardley, Birmingham B25 8BN. Alternatively use the coupon or telephone John Newcombe for OEM Sales 0634 401721, Martin Hunt for Communications Sales 01 422 3442, Ken Bridden for Business Systems 01 422 3442.

I am interested in applying for the Sales Executive position in:
☐ Business Systems
☐ Communications Products
☐ Facit Data Products
Please send me an application form
Name .....
Address .....
.....
Telephone .....

ERICSSON
Ericsson Information Systems Ltd
Swan Office Centre
1508 Coventry Road
Yardley, Birmingham B25 8BN
Telephone: 021-707 3050

SENIOR APPOINTMENTS – £14K +

CONTRACTORS TAKE NOTE...

Just three simple facts that make COMCAP your first choice in using an agency.

● FACT
COMCAP will pay you top market rates.

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COMCAP pay your invoices the same day as they are received.

● FACT
COMCAP tell you the charge rate to the client.

The contracts listed below are just a selection from the many that we are currently staffing.

PROGRAMMERS	HP3000 COBOL IMAGE	Berks.
	IBM 303X PL/1 IMS	London
	IBM SYS/38 RPGIII	Surrey/London
	IBM 303X COBOL IMS DB/DC	Beds.
SYSTEM PROGRAMMERS	IBM MVS CICS	London/Midlands
	VAX	Holland
ANALYST/PROGS	IBM 303X PL/1 IMS	London
TECHNICAL CONSULTANT	ICL 1900/2900 GEORGE III	Home Counties

If you have the skills for these contracts or you are looking for a new contract in the next three months let Comcap be your guide to success.

COMCAP
Licence No SE5792

For further details contact Colin Hill on 01-723 4053 or write in confidence to COMCAP RESOURCES, 26 Chilworth Street, London W2 6DT. Alternatively complete the FREEPOST coupon below.

Surname. Christian Names
Address.
Please include Postcode
Telephone Number Home: Office: (include STD code)
Job Title
Tick appropriate boxes Please send an application form ☐ Location Preferred: United Kingdom ☐ Overseas ☐
Brief Experience
Availability
My own C.V. is enclosed: ☐

Post your envelope to: COMCAP RESOURCES FREEPOST LONDON W2 6BR NO STAMP NEEDED

SALES PROFESSIONAL
FAULT TOLERANT SYSTEMS

BASIC TO £15K (OTE £25K+)
PLUS GUARANTEE AND CAR
CITY BASED MANAGEMENT POTENTIAL

The Fault Tolerant Systems market is one of rapid expansion and "state of the art" development. Our clients, already the second largest supplier of computer equipment in Europe, has enhanced its product range by establishing a specialist division to sell a new range of Fault Tolerant Systems in competition to TANDEM and CTL MOMENTUM.

Controlled by a Marketing Manager, the new group has a vacancy for a Professional Sales Executive with management potential. Candidates should have had experience in:

★ Data processing equipment sales
★ Systems sales with strong communications and software content
★ Knowledge of information systems available in the U.K., particularly to financial users

Please telephone BOB BOWER to discuss this excellent opportunity in more detail.

Ref: CW0809/1

HUTTON EXECUTIVE SELECTION LTD.
31 PALACE STREET,
LONDON SW1E 5HW.

TELEPHONE: 01-630 9434 (24 HOURS)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

LET YOUR HIGH TECHNOLOGY CAREER GROW IN THE GARDEN OF ENGLAND

SALES PEOPLE – 20K Plus

Micro Technology are looking for intelligent, articulate individuals with a proven record of success in the sale of micro computer-based systems.
As authorised dealers for the IBM PC we need your help to make the most of the opportunities available in this pleasant part of England. The reward for hard and successful work includes a package of 20K plus, a company car, private medical insurance and four weeks' annual holiday.
We offer a unique opportunity to sell first class systems from the world's best known computer manufacturer to a large and responsive market.

We are also looking for:

HARDWARE ENGINEERS – To 10K

To install and maintain mainly IBM-PC and Z80-based systems. Training will be given on specific hardware. Knowledge of micro-based systems and electronic/electrical qualifications are essential for these positions.

PROGRAMMER – 7 to 12K

To develop and install a micro-based software distribution system. The successful applicant will be familiar with 8080/Z80 and CP/M. Knowledge of 8086/8088 and MS-DOS/PC-DOS would be useful but not essential. Proven ability would be considered as being more important than formal qualifications for this position.

SOFTWARE CONSULTANTS – To 12K

To support our successful sales team in researching, demonstrating and installing the latest in software available on the micro systems we sell. Knowledge of micro applications packages and the MS-DOS or CP/M operating systems will be a distinct advantage. A degree in computer or business related studies would be useful for this position.

If you are interested in joining a successful young company and growing with us, please write to us, or alternatively phone David Owens on 0892 45433.

MICRO TECHNOLOGY LTD., 51 THE PANTILES
TUNBRIDGE WELLS, KENT

IBM AUTHORISED DEALERS FOR THE IBM PERSONAL COMPUTER

SENIOR APPOINTMENTS – £14K +

Computer Operations Manager

Location: Rural, to the South of London

Salary: Around £20K + other significant benefits

This is a completely new position created by the significant expansion of our client's Management Services Department. Our client is a major IBM user and we now wish to recruit someone to be responsible for the Computer Operations Department and the associated area. The successful applicant will be:-

★ Educated to degree level
★ A good man-manager
★ Dedicated to user service
★ A manager who has strong technical skills
★ A believer in themselves and their ability to maintain high quality output and control of their own staff
★ A good negotiator and someone who does not get ruffled under pressure.

The department controls, not only the daily operational function, but also the systems programming area, and therefore the successful applicant will have the skills associated with managing this highly important and sensitive technical group. Applicants with experience of systems management or operations management could be equally attractive candidates.

This is an outstanding opportunity for someone to take control of a rapidly developing department and lead it from both an administrative and a technical point of view. If you believe you have those important talents of administrative skills and technical skills, please contact John Goldsmith at:-

A&A Consultants (Holding) Ltd., County House, 10 Little Portland Street, London W1N 5DF.
Telephone 01-631 4184.
Please quote Ref. No. 405.

MERIDIAN CORPORATE MANAGEMENT 63 WIGMORE ST. LONDON W1. 01-486 2821

A major multi-national engineering group based to the West of London is seeking senior personnel for their technical services division

TECHNICAL SERVICES MANAGER
to £15,000+car+benefits

Our client requires a professional with at least five years' experience of IBM systems and extensive knowledge of **MVS, CICS, DL/1, ACF/VTAM, ACF/NCP.** You will be aware of the latest developments in the computer industry and will be able to evaluate and implement new hardware and software strategies. The ability to communicate with users and senior management, and the potential for self-development are important criteria. European and some US travel will be necessary.

DATABASE ADMINISTRATOR
to £15,000 plus benefits

You will have a **COPICS** (or similar) background and an extensive knowledge of the **DL/1 Database.** Liaising closely with the systems development staff, you will provide guidelines and standards and ensure that availability, integrity and security of the Database is maintained. Already proficient, you will be looking to advance from your current position and will be seeking a career with a company dedicated to the development of sophisticated on-line systems.

MCM is an international consultancy with a background in sales, management and education in the computer industry. All enquiries are dealt with in the strictest confidence and you will be dealing with consultants who have an in-depth knowledge of all aspects of Data Processing gained at technical and senior management levels.

Telephone us now on **01-486 2821/2508** for further details

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The systems development division of a major multi-national engineering group based to the West of London is seeking two senior personnel. The company utilises IBM mainframes with **MVS, CICS and DL/1.**

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Ideally you will have spent the last three years' as an analyst in a manufacturing environment and have a background in programming. It is essential that you are a good communicator and can control the development of sophisticated on-line systems. A knowledge of **COPICS** and **Database** is advantageous.

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If you have a good knowledge of **COBOL** programming in an on-line environment and experience of **Database,** this could be an ideal career opportunity. You will be responsible for a team of programmers working on a number of important projects. Liaising closely with the systems analysts you will ensure that programming standards are met and maintained. You will also have responsibility for training and the ability to control and motivate junior staff is important.

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Please contact BOB BOWER for further information. Ref: CW0809/2

(5378)

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BOB BOWER is advising on this post and will be happy to discuss details, although a written application would be preferred. A full job specification is available and the timescale immediate. Interested parties are requested to apply at once. Ref: CW0809/3

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To aid them in the development of this interactive package, they are currently seeking to recruit a team of professionals to work on the development, installation and enhancement of the system in both the UK and overseas marketplace.

Senior Analyst/Programmers
(DEC/VAX computers)
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Knowledge of interactive COBOL gained within a VMS environment is essential, backed up with a good exposure to manufacturing systems, and the ability to communicate well at all levels.

Manufacturing Consultants
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+ Car + Bonus + Benefits

A thorough exposure to manufacturing systems ideally with a practical involvement in a production environment is required, combined with the ability to control and manage a small team of personnel.

Analyst/Programmers
(Minicomputers)
c.£8,000
+ Car + Bonus + Benefits

Two to three years experience of mini based systems enhanced with a thorough understanding of interactive COBOL is a pre-requisite, gained in either a commercial or manufacturing environment.

To join this exciting development team, all applicants must possess the drive and enthusiasm to succeed within a fast moving innovative environment. Obviously, in dealing with all levels of management and users, a pleasant personality is called for, and some travel within the UK, Europe and the USA will be required.

Step into this new age, and in exchange for your experience of interactive systems, our Client will reward you with an excellent salary package including COMPANY CAR, PROFIT SHARING BONUS, non contributory pension scheme and health and life insurance, and give you the chance to work within a pioneering and exciting development area.

For further information, please contact our Advising Consultant **Graham Utton** on **021-236 3781** (24 hour answering service) or 05435 3782 (Evenings until 9.00 pm).

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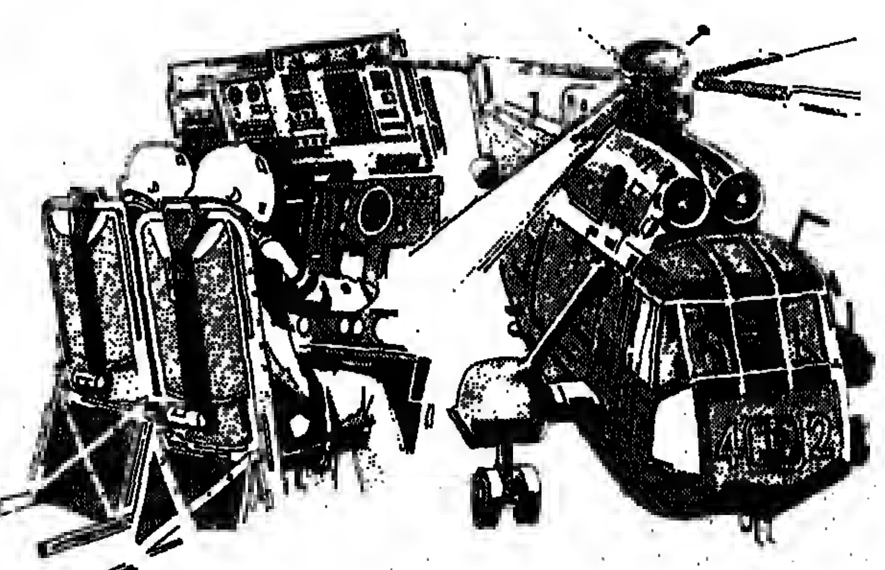

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To keep us at the forefront of training systems development we are very interested in hearing from SOFTWARE SPECIALISTS and SOFTWARE ENGINEERS with a degree in an Engineering Subject, Mathematics or Physics and successful experience in real time computer systems.

Informal discussion . . . please contact Colin Roberts, Career Development Manager, on 061-428 0771 during office hours and 061-428 0194 after 5 p.m. and at weekends, or write to Colin, quoting reference 329/34, at Ferranti Computer Systems Limited, Bird Hall Lane, Cheadle Heath, Stockport SK3 0XQ.

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Programmers

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A competitive starting salary will be supported by an excellent range of benefits including, where appropriate, assistance with relocation to this attractive area. To find out more, 'phone Mike Sparkes on Reading (0734) 581166 for an informal discussion and the possibility of an early interview, or, send your c.v. to Mr. P.G. Kerry, Personnel Manager, Whitbread and Company PLC, Whitbread Court, Letcombe Street, Reading, Berks RG1 2HW.

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These opportunities are open to able Applications/Systems Programmers with at least 2 years experience including IBM and COBOL, or HP 3000 and COBOL. Knowledge of ASSEMBLER/CICS/DL/1 is desirable for some of our vacancies.

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Experience in VAX/VMS, RSX11/M, DECNET and TOTAL is necessary. Knowledge of Arabic is an advantage.

Arab National Bank, offers excellent salaries contingent upon experience (14 month salaries per year) and attractive benefits program including: Furnished accommodation (or equivalent 4 month salary), Medical Care and ticket to the point of contract for applicant and his family.

Qualified applicants are urged to respond by sending resume and salary history (with copies of qualifications and experience history) in confidence to George Shaw.

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You will have considerable freedom of action and responsibility to act on your own initiative. The modularity of the overall system plan will enable you to see the results of your efforts in a reasonably short time.

These opportunities will interest people with around three years' or more COBOL and a good educational background (A levels or better) plus experience of on-line methods, systems design and some analysis. UNIVAC 1100 knowledge is required for the East London opening, but for Victoria minicomputer installation hardware background is unimportant since training will be given.

Please ring us quoting reference 523 or write briefly and we will tell you more about these opportunities.

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Assembler Programmer
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An innovative British company developing POS systems has a fascinating opportunity for a programmer with two to three years' assembler programming experience. Work will be on applications ranging from POS, Stock Control, Accounts and Payroll to Operating Systems. Good colleagues and excellent working conditions. Ref: 0809/B

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A large banking organisation that provides excellent staff benefits including interactive development facilities (one terminal for each programmer) and training plans to introduce major new systems. Experience of COBOL, CICS and DL1 after a good educational background is the key to your participation. Ref: 0809/C

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Herts, Beds, Surrey — **£10-£13K**
Opportunities exist with several of our clients to work on both defence and civil real-time systems where the need is for hardware and/or software skills with microprocessors and device drivers. Excellent promotion prospects with expanding companies who are able to offer relocation if needed. Ref: 0809/D

Programmers/Team Leaders
South Coast — **£8-£16K**
Our Systems House client is expanding fast and excellent career prospects are available to programmers with two to seven years' experience of defence and allied work. CORAL, PASCAL or FORTRAN skills are needed. New offices are being established in Southampton and staff will work there and on nearby client sites. Ref: 0809/E

Viewdata Systems Micra Programmers
Herts + Overseas possibilities — **£9K+**
Our client is developing viewdata systems and communications links for these and other applications using X25 protocols. Knowledge of X25 and M68000 assembler advantageous but other relevant experience will be considered. Graduates with two years' programming experience preferred. Ref: 0809/F

Software Development
Surrey — **£10,000-£12,000**
This is a specialised role involving the design, development and implementation of software for diagnostic and test purposes. Candidates must be familiar with DEC PDP 11/RSX 11 and ideally have had experience of working at hardware interface level. Knowledge of PASCAL or FORTRAN would be an added advantage. Ref: 0809/G

Programmers (Comms. Software)
Middx — **£10,000-£14,000**
This systems house specialises in transaction processing technology and has designed and installed a number of sophisticated switched networks, mainly in the financial sector. Vacancies now exist for high-calibre programmers with sound COBOL, ASSEMBLER or PASCAL experience and full training will be provided on TANDEM COBOL/TAL. Ref: 0809/H

Real-Time Expertise
Surrey Border — **£9,000-£17,000**
High technology systems house needs designers and consultants to be involved in the development and installation of defence, information and industrial real-time applications. Familiarity with Assembler or Real-Time/mathematical languages is desirable. Substantial remuneration package and relocation offered. Ref: 0809/J

Analyst/Programmers
London — **Up to £10,000**
A minimum of 12 months' on-line programming experience is required for two bright and enthusiastic programmers to join a small dynamic team involved in the development and support of leasing systems for the UK and European markets. First-class remuneration package and career prospects. Ref: 0809/K

Computer Engineers
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A very prestigious and profitable organisation is currently replacing its communications network. As a result opportunities of rare scope exist for programmers with at least 12 months' experience of PL/M or PASCAL/RTL 2 to join small highly skilled teams developing new communications facilities and databases. Ref: 0809/L

Scientific Consultancy
London — **Up to £15,000**
A leading UK consultancy requires additional high quality, professional staff at varying levels. Candidates must be graduates and have experience in one of the following areas: Digital Electronics, Simulator Design, Navigational Systems, Avionics or Acoustics. Excellent career prospects in a growing organisation. Ref: 0809/M

Mathematicians
North London — **£13K**
Mathematicians are needed with experience of target acquisition, trajectory modelling and simulation to join teams working on the early stages of a major new weapon system project. Good degree essential. Relocation assistance will be provided if needed for candidates to join this company which offers outstanding career prospects. Ref: 0809/N

Analyst Programmers
London/Overseas — **Up to £12.5K**
Rapidly expanding systems house with worldwide client base needs Hewlett Packard experts. Specification and implementation can be overseas but development in London on the in-house machine. Five years' experience, the last two on HP 3000, using IMAGE, QUICK, QUIZ etc is needed for these positions. Ref: 0809/P

(5299)

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HP 3000	PROGRAMMER/ANALYSTS	MIDDLESEX
RAMIS	PROGRAMMERS	SUSSEX
CICS (COMMAND AND MACRO LEVEL)	PROGRAMMER	DERBY
MVS	SYSTEMS PROGRAMMERS	LONDON
ICL 2900, COBOL	PROGRAMMERS	LONDON
ICL 2900, INVENTORY CONTROL EXP.	ANALYSTS	SURREY
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RECRUITMENT OPPORTUNITIES

DEC SYSTEMS ANALYST
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Up to £15,000

Our clients, a well-respected service bureau, have a requirement for a systems analyst to join one of their project teams. Ideally, applicants should possess a minimum of three years' experience in analysis and design of Commodity accounting systems plus a programming background using Basic, although Stockmarket or other Financial applications experience will be considered. The successful candidate will work closely with other members of the team and will report directly to the Project Leader.

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Up to £14,000

This well-known company have an urgent requirement for an I.B.M. Systems Programmer who has extensive experience of the generation and maintenance of M.V.S. operating systems on either 30XX or 43XX series hardware. The benefits associated with this position include flexitime working arrangements, staff shop and L.V.s.

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Up to £11,000

An experienced Analyst/Programmer is sought by this company to work on the development of a new ledger software package. Applicants must have a minimum of four years' programming in Fortran and have previously worked on a variety of ledger applications. This is a newly created position and would ideally suit someone in their late 20s-early 30s. Benefits include a 32.5-hour working week.

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A major British company have a requirement for a young programmer to join their development team based in London. This represents an ideal opportunity for candidates of "A" level or degree standard, and two years' programming experience in BASIC+2 using RMS on DEC equipment, who wish to develop their potential in a demanding environment.

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COBOL DL1 DB/DC Programmers	WARWICKS
COBOL, TOTAL, VSAM Analyst/Programmers	LONDON
DOS/VSE COBOL, SHADOW Analyst/Programmer	OXFORD
RPG II Sys 34 SDA, MCV, Programmer	SURREY
U1100 COBOL FMS, Datetrieve Analyst/Programmer	LONDON
WICAT RM COBOL Analyst/Programmers	CITY
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PL1, SHADOW Analyst/Programmer	LONDON
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BURROUGHS EPS, FC5 Modelllg Programmers	LONDON

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North West

Background

Our client is a blue chip company operating in the financial area which has expanded this Data Processing function by over 30% in the last two years, and will maintain this growth in the foreseeable future.

The Positions

Major on-line finsncially orientated projects have been agreed. Development work on these will commence shortly and there is a requirement for young professionals already with major systems experience who are seeking an innovative environment where ability can quickly be rewarded in terms of earnings and responsibility.

Candidates

Ideally will be graduates with upwards of four years' relevant systems and programming experience gained in a professional installation or software house, embracing exposure to controlling project teams. Equipment background is less relevant than sound personal qualities.

The Company Offers

Excellent career prospects, including formal training programmes, regular performance appraisals and promotion on merit within a growing department. As well as a subsidised mortgage facility, other benefits include full relocation as appropriate, excellent pension scheme, profit sharing and up to 26 days holiday. Flexitime is also operated.

(5284)

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For further details contact Tony Roberts on (0270) 627206 daytime or (0270) 624053 evenings and weekends or write to him at the address across enclosing details.

Operations Manager (HP 3000/68)

Rural Kent

to £11,000 + Relocation

Our Client is part of a large, multi-national Group of Companies, currently engaged in the implementation of a network of interactive minicomputers throughout the UK. During the coming months, Hewlett Packard 3000 minis will be installed at each of the Company's regional offices, each machine being central to the region's processing needs.

One such regional office is located in an impressive former country residence standing in picturesque grounds in a rural area of Kent, close to Sevenoaks. A 3 megabyte HP 3000/68 is soon to be installed and, in order to assist the Data Processing Manager in the preparation for the arrival of this new machine and its incorporation into our Client's nationwide network, a requirement has arisen for an experienced Operations Manager, who will play an integral part in the establishment of this new installation and its associated communications facilities. The Operations Manager will be instrumental in the establishment of a local network and plans exist to double the number of terminals in use in the medium term.

The ideal applicant will be fully experienced in HP 3000 Operations Management, having a good knowledge of both hardware and communications and the ability to manage a small team of staff. Once the physical installation of the machine has been completed, the Operations Manager will assist the DPM in the day to day activities of the Region's Computer Department, in addition to playing an active part in planning future activities and liaising with Operations Managers in other regional offices throughout the UK and the Group Head Office, which is situated in the West of England.

This position provides a very interesting challenge for a mature person in addition to a very pleasant, rural working environment. Furthermore, good promotional prospects exist within the Organisation, giving the successful applicant excellent long term career opportunities within a well-resourced, well-managed Group of Companies.

Candidates with sound experience of HP 3000 operations management should contact **Ian Payne** at the SCR Birmingham office on **021 236 3781** (24 hour answering service) as soon as possible as our Client wishes to interview shortlisted applicants during mid-September.

Initial interviews will be carried out at SCR regional offices at the Client's expense.

Technical, Sales & Management Appointments

(5347)

SCR

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Experience with UNIX, C and/or VAX VMS is desirable but not essential. Ref 0405

Technical Author (Software) — France

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Programmers — ICL 2900

Our customer requires experienced ICL 2900 programmers for project tasks commencing in October. Knowledge of IDMS is essential and TPS familiarity is also desirable. Programming language is COBOL. Northern Home Counties/Duration 6 months +. Ref 0400

Programmers — ICL 2900

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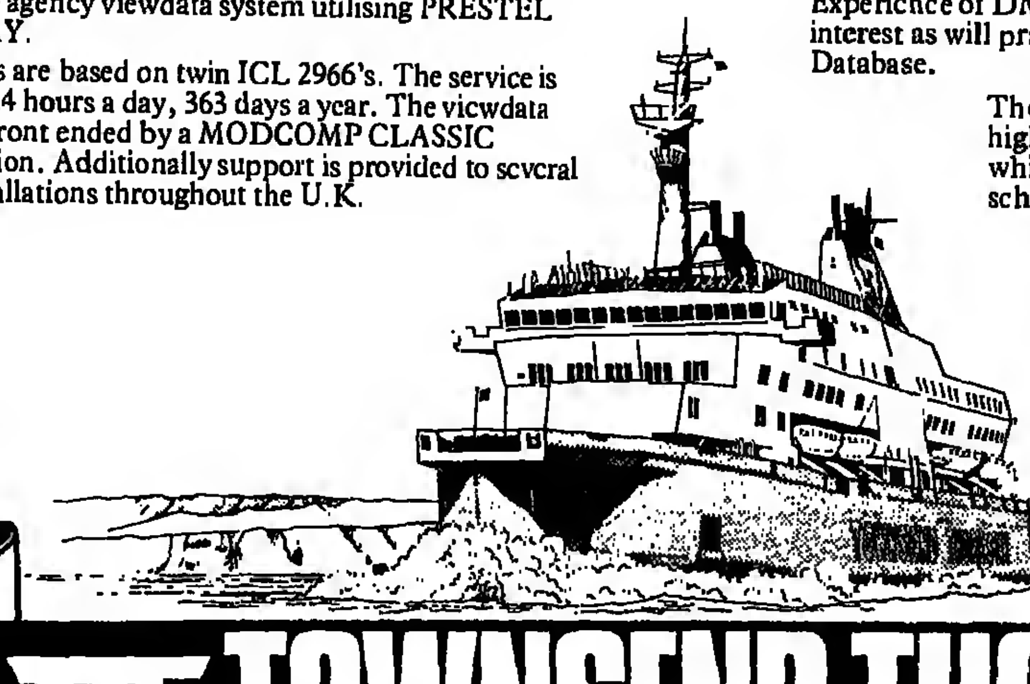

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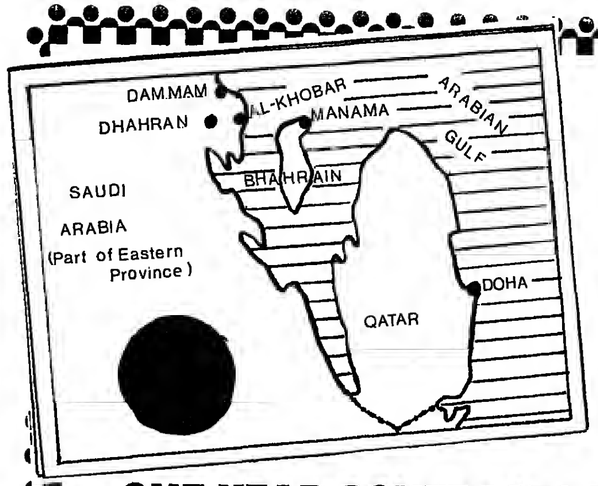

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Requirement 5/B — QATAR
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Numerous vacancies at all levels for sound ICL Programming skills. Particular requirements are for VME/B skills coupled with IDMS and/or TP. Numerous opportunities in the 2904/ME29 area – again TP skills are valuable. Some requirements for S10/S25 talents also. Environments cover manufacturing, commercial and finance/banking. REF MN/CW

HONEYWELL LEVEL 66 — £ Very Negotiable
Lecturers required with sound commercial experience of large L66 Systems using DM4/TP or IDS2/TDS. Ability and willingness to teach more important than previous education experience – Sound L66 GCOS is the Criteria! REF MN/CW.

UNIVAC — To £10,500+Perks
ANALYST/PROGRAMMERS with Database and/or On-line skills, minimum 2 yrs. experience in commercial or manufacturing environment. Also some opportunities for people with good 1100 experience to move into finance/insurance. REF MN/CW.

WANG PROGRAMMERS — LONDON & SOUTH EAST
Do you have 3 yrs.+ WANG VS or OIS Programming experience, if so, you become applicable for the numerous vacancies we are being retained to recruit for. Our clients include Software Houses, Insurance Companies and various commercial businesses. Salaries range from £8,500-£12,000+Perks. REF SR/CW.

H.P. 3000 PROGRAMMERS & ANALYST/PROGRAMMER — S.E. ENGLAND
If you have 2-3 years' H.P. 3000 COBOL experience with IMAGE, QUERY, VIEW & QUIZ, we have several vacancies in and around London that you would be applicable for. Salaries up to £10,000 for PROGRAMMERS, up to £12,000 for ANALYST/PROGRAMMERS. REF SR/CW.

PRIME PROGRAMMERS and ANALYST PROGRAMMERS — LONDON
Our clients, a major Software House based in London require PROGRAMMERS and ANALYST/PROGRAMMERS with 2-4 yrs.' experience in developing commercial accounts systems in COBOL or FORTRAN on PRIME equipment. Preference given to applicants who are highly motivated with strong personalities. Salaries dependant upon experience – up to £13,000. REF SR/CW.

ANALYST/PROGRAMMER SUSSEX — Up to £10,500
Our client, a prominent figure in the entertainments industry have an urgent requirement for an ANALYST/PROGRAMMER. The successful applicant would have at least 2 yrs.' 6 mths. H.P. 3000 COBOL experience with IMAGE, QUERY, VIEW & QUIZ to work on accounts systems. Usual large company perks. REF SR/CW.

BURROUGHS PROFESSIONALS — ALL AREAS
We are still being retained by many prestigious clients to recruit BURROUGHS PROGRAMMERS, ANALYST PROGRAMMERS and SYSTEMS ANALYSTS in all areas. If you have at least 3 yrs.' experience, contact us now for more information. REF SR/CW

IBM (JUNIOR) PROGRAMMERS — To £10,000
At least 18 months IBM programming experience and good communication skills will qualify you for a move into analysis or training in ONLINE and DATABASE techniques. Vacancies exist in all areas of London and the Home Counties. REF MB/CW.

RPG 11 PROGRAMMERS and ANALYST/PROGRAMMERS — To £14,000
We currently require GOOD RPG2 experience for a variety of challenging positions. Opportunities include training on SYSTEM 38 or a move into international banking. REF MB/CW.

RPG 111 PROGRAMMERS and ANALYST/PROGRAMMERS — To £18,000
One year's solid RPG 3 and a sound D.P. background preferably on GSD equipment, is sought by a number of clients. A number of vacancies exist in the SUSSEX area (full relocation expenses paid) and north of the river. REF MB/CW.

PL/1 and/or ASSEMBLER — To £12,000
Large IBM user running MVS require PROGRAMMERS and ANALYST/PROGRAMMERS to work principally on development of new systems. 2 years'+PL/1 and/or ASSEMBLER exp. required for this Middlesex site and similar vacancies exist throughout the South-East. REF MB/CW.

SYSTEMS PROGRAMMERS — To £16,000
SYSTEMS PROGRAMMERS with 2 years' DOS, MVS or VM Systems. Experienced candidates should have a good working knowledge of CICS together with a sound programming background using COBOL, ASSEMBLER or PL/1. REF RC/CW.

DATABASE SPECIALISTS — £14,000-£19,000
Candidates must have a thorough knowledge of database techniques together with a sound background in DL1, IMS or ADABAS preferably gained in a Database Technical Support Group. Experience of setting up a database from feasibility through to implementation would be a distinct advantage. REF RC/CW.

CICS PROGRAMMERS — To £13,000
2 years' experience of working on IBM mainframes under DOS/VSE, OS/VS1 or MVS Systems. A good COBOL programming background is essential as is at least 1 year of working on CICS Systems. REF RC/CW.

SYSTEMS ANALYSTS — To £14,000
HAVE YOU GOT 2/3 YEARS' ANALYSIS EXPERIENCE? A number of clients seek ANALYSTS with experience of commercial or financial systems gained on large IBM sites. REF RC/CW

HONEYWELL LEVEL 64 — To c£11,000
Vacancies in N. LONDON, W. LONDON, WEST COUNTRY, THAMES VALLEY for PROGRAMMERS with sound GCOS skills, particularly TDS and IDS. Perks include Bonus Scheme, Cars etc. PROGRAMMERS with GCOS/NETWORKING TECHNICAL skills particularly sought after. REF MN/CW

SOUTH ENGLAND — £ Excellent
Do you have experience of the following – Instrumentation, Data Acquisition, Data Communication, Systems, Display+Database Design. My company, a large well-established Software House are seeking PROGRAMMERS to SENIOR CONSULTANTS. You will be working on a variety of projects and should have experience of either CORAL 66, PASCAL RTL/2, ASSEMBLER, FORTRAN on hardware such as DEC PDP's, VAX, INTEL, H.P. Perks include BUPA, private pension, relocation package, excellent salaries and an opportunity to travel. For more information contact SHIVON.

SENIOR SOFTWARE ANALYSTS HERTS — To £13,000
Flexible attitude and knowledge of high level block structured languages are required for positions involving occasional International Travel. You will be developing ETHERNET based office products, working on state of the art LAN technology. PERKS are excellent and there are opportunities for career advancement. REF SF/CW.

ELECTRONICS & SOFTWARE/SYSTEMS ENGINEERS NORTH LONDON — £ Negotiable
You will be working on VAX and INTEL. Conditions include relocation assistance, 37 hour week, 6 weeks holidays, free pension and life assurance, sports and social facilities. My clients are prime contractors to the M.O.D. for electronic warfare and guided weapon systems. Due to a massive development program they are seeking personnel from an electronics/engineering background, junior or senior level, including – SOFTWARE ENGINEERS – 1 yr.+experience of software design preferably using CORAL 66. MICROWAVE ENGINEERS – 1 yr.+experience in a microwave design environment. SYSTEM ENGINEERS – 1 yr.+of mathematical modelling of digital systems. If you are looking for a challenge and opportunities to develop your career, then why not call SHIVON to discuss mutual requirements.

SYSTEMS & PROGRAMMING MANAGER NIGERIA — £29,000 p.a.
Due to further expansion of overseas outlet, an opportunity has arisen for a SYSTEMS & PROGRAMMING MANAGER, educated to degree level, looking for a challenging and involved position to stretch already acquired technical and supervisory skills. You will be working on DEC PDP 11, RT11/CTS300, equipment, using DIBOL, in an international organisation, and be actively involved in systems analysis and programming with emphasis on user contact and the management and training of staff. Accommodation is provided for single or married status. REF JH/CW.

PROGRAMMERS TO PROJECT LEADER LEVEL BERKS & ESSEX — £7,000-£13,000
BERKS: VAX experience preferred (PDP 11 BASIC+background considered. VAX-COBOL will retrain to VAX-BASIC). You will be involved with teams developing commercial and financial systems. Project Leaders will be in charge of teams of up to eight staff and European travel is required.
ESSEX: Two major organisations require DEC PDP 11 Programmers, Analyst Programmers and Project Leaders. One company has Project Teams of up to six people developing Insurance Systems on PDP 11/60's and 11/70's under RSTS/E, using BASIC+/+2. The second company will retrain any DEC PDP language user in a commercial environment for their small PDP 11's, for positions entailing international travel and user contact at high level. Benefits include career prospects and relocation assistance. REF JH/CW.

ANALYST/PROGRAMMER CITY — £11,000
From two years' BASIC+ on DEC is required by professional services company utilising PDP 11/70s and micro computers. Initiative and a responsible attitude is necessary to design a variety of commercial applications. REF JH/CW

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PROGS BUSINESS BASIC EXP.	LONDON	ASAP	ANALYST PAYROLL CONVERSION	MIDDX	ASAP
PROGS/ANAL/PROGS IBM COBOL IMS	S. LONDON	ASAP	A/P/DESIGNER PDP+MUMPS	LONDON	OCT
DESIGN/PROGS MICRO+'C'	H. COUNTIES	OCT	ALL LEVELS DATAPOINT/DATABUS	H. COUNTIES	ASAP/
PROGS VAX COBOL+DATABASE	H. COUNTIES	ASAP/JAN			OCT/NOV
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MVS, FORTRAN, DEGREE	Analyst/Programmers
System 38, RPGIII	Programmers
E.P.S.	Analyst/Programmers
S.A.S.	Any experience
RAMIS	Analyst/Programmers
5 years' Project Management Experience	(Europe)

ICL

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OTHERS

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VAX11/780, SYSTEL, COBOL	Programmers
TANDEM, Guardian, COBOL, Pathway	Programmers
MICROS, Single Chip Processors	Hardware Engineers
COBOL and FORTRAN or ASSEMBLER	Senior Analyst/Programmers (Europe)
Financial/Audit background	Business Analysts (Europe)
B6800, COBOL	Maintenance Programmers
HP or DEC or Elliot Auto.	Any experience
CORAL 66, 2½+ years' experience	Real-time Designers

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Artificial Intelligence

Thames Valley: Salaries to £14K

Our Client's Research Centre, established in 1978, has recently taken additional premises in the Reading area. An immediate requirement exists for personnel to participate in the development of the Company's range of products and services. You are probably engaged as a **Systems Programmer, Designer or Consultant** and have a minimum of B.Sc. degree in a numerate subject. Those who hold an M.Sc. or Ph.D. are encouraged to apply if they can combine an academic background with some relevant industrial or commercial exposure. The Company's specialist areas of activity demand that all potential employees have an in-depth knowledge of two or more of: artificial intelligence, cybernetics, knowledge engineering, robotics, process and control engineering.

Ref: L/36/A

'C' & UNIX Programmers

London: Salaries to £10K

A highly respected Product Supplier is currently seeking to recruit several **Systems and Applications Programmers** to work on its UNIX-based range of products. Applicants, aged 22-26 years, should have graduated since 1980 with a good class honours degree in a numerate subject and have at least one years commercial or industrial experience. Very recent M.Sc. or Ph.D. candidates are also encouraged to apply particularly if their chosen subject matter was directly concerned with UNIX systems software. It is advantageous to be fluent in 'C' programming language and also offer PASCAL as a secondary language.

Ref: L/36/B

Firmware Programmers

Home Counties: Salaries to £11K

A small but rapidly expanding company has a number of vacancies for **Firmware Programmers/Designers** to join its product development group. Acting as the external development department for many of the leading names in the industry, the company is able to offer a wide range of hardware and software involvement. Suitable applicants will be graduates with a B.Sc. or M.Sc. in Electronic Engineering or Computer Science. It is essential that you offer fluency in Micro Assembler with additional knowledge of a block structured language such as Pascal or 'C', being desirable. Mostly based in-house you will be involved in the development of intelligent terminals, data capture equipment, multi-micro communications processors or ATE software.

Ref: L/36/C

RSX/VMS Progs

London & H Counties: Salaries to £13K

The Communications Division of a leading Systems Supplier and Consultancy is currently seeking additional **Systems Programmers**. Suitable applicants should be graduates with a minimum of two years software or systems design experience within a PDP/RSX-11M or VAX/VMS environment. It is essential that you should offer fluency in Assembler and that you are fully familiar with the internals of RSX-11M or VMS. Additional knowledge of a high level language e.g. FORTRAN or PASCAL would be a distinct advantage, as would experience of working within a data communications or distributed processing environment. Applicants who demonstrate management potential or those who already have some project leading experience will be considered for more senior positions within the project teams.

Ref: L/36/D

Micro Development

Central London: Salaries to £15K

A leading Systems Supplier and Consultancy currently requires a number of **Project Leaders, Applications and Systems Programmers**. Suitable applicants should be educated to B.Sc. level and have a minimum of one year's subsequent industrial experience in a microprocessor based environment. Of particular interest, will be applicants who have some knowledge of Intel microprocessors using PL/M as a principal programming language and having PASCAL as a secondary language. For certain positions, it is mandatory to have an in-depth knowledge of Intel's RMX operating systems and development tools. However, candidates who are familiar with other microprocessor systems will certainly be considered.

Ref: L/36/E

Systems Engineers

Herts/Beds: Salaries to £13K

The Hardware and Systems Group of a leading computer manufacturer has a number of vacancies for **Senior Systems Engineers**. A good degree in Electronics or Electrical Engineering, supplemented by 4/5 years industrial experience, are minimum requirements. Additionally, successful candidates will be required to have project management experience or potential and an ability to work under stress conditions. The main area of responsibility will be the design and implementation of terminal equipment interfacing to Local and Wide Area Communications Networks. Practical experience in this field will be especially welcome, as will knowledge of bit-slice processors.

Ref: L/36/F

Real-Time Programmers

Central London: Salaries to £11K

A leading Systems House and Consultancy is seeking to recruit additional **Real-Time Programmers** for its Central London Head-Office. Suitable candidates should be graduates with at least 12 months subsequent programming experience in a real-time scientific environment. It is essential that you offer fluency in at least one of the following: PASCAL; 'C'; FORTRAN; ADA; CORAL-66 or Assembler. Hardware experience is less important, but preference will be given to applicants who have recently worked in a development role on PDP-11/VAX; Intel 8080/8 or Motorola 6800/68000.

Ref: L/36/G

Signal Processing

S, Home Counties: Salaries to £14K

Our client, one of the leading UK Systems and Software Houses has a number of vacancies for **Signal Processing Specialists** to join either the Central London or Surrey based offices. Applicants should be graduates in a scientific discipline and have subsequently gained at least two years experience in an industrial or defence environment developing software for signal processing applications. Those who have current or very recent experience with Floating Point Systems array processors are particularly encouraged to apply.

Ref: L/36/H

(8368)

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IBM OPPORTUNITIES

ANALYST/PROGRAMMER ESSEX
£8-10,500

Due to major expansion plans for 1984, my client, a highly respected British manufacturing Company is seeking a number of analyst/programmers to join their sales and marketing development team. Two years + IBM COBOL is essential, preferably coupled with DOS/VSE and CICS, however due to the number of posts available, CICS training can be provided. Normal large company benefits and superb prospects. Ref. EW2737

IBM ASSEMBLER CITY
To £12,000

Two new positions with International City Bank housing a range of IBM mainframes, GSD and DEC machines. They require a senior programmer with 4 years + experience, and a programmer with 2 years + experience of IBM Assembler, DOS/VSE and hopefully UNIPAY or financial experience. You will play an important role in their support team, with every opportunity to increase your user liaison skills. Full banking package including subsidised mortgage. Ref. EW1572.

SYSTEMS ANALYST MIDDLESEX
To £13,000

International marketing/retail organisation housing IBM 4300 kit under DOS/VSE with CICS and DL/1, is seeking 2 analysts with an IBM background, and 4 years + D.P. experience. You will be working on the investigation and development of a range of sales, marketing and manufacturing systems, and should have very strong personal communication skills. Full range of benefits including relocation assistance where necessary. Ref. CW2723

ANALYST/PROGRAMMER
To £10,500

Superb opportunity for ambitious young analyst/programmer to join this import/export company. The ideal candidate will be well-educated, with 2 years experience of IBM COBOL DOS/VSE, and possibly some knowledge of CICS, DL/1 or RPG II, coupled with plenty of drive and enthusiasm. Benefits include non contributory pension, free health assurance, 5 weeks' holiday and relocation assistance. Ref. CW2722

PROGRAMMER SURREY
To £9,500

12 months' + commercial IBM COBOL gained in a DOS/VSE environment, are the essential requirements for this interesting development position. You will be working in an IBM 4341, DOS/VSE, VM/CMS, CICS, UFO environment, so any knowledge of these skills would be advantageous. Current projects include payroll, ledgers, financial modelling and you will be joining a young dynamic team and rewarded with flexitime, paid over/time, free parking and staff discounts. Ref. CW2729

PROGRAMMER/ANALYST LONDON
To £10,500 Neg

One of the world's largest petroleum groups, has a need for programmer/analysts who can use their initiative and drive, within a structured team environment. 2 years' + IBM MVS COBOL is essential, and you will be working in a CICS and DL/1 environment with VSAM and JES 2. Plenty of opportunity to move more towards an analysis role if desired. Call for more details. Ref. CW2727

INTERNATIONAL TRAVEL
To £11,500

Outstanding opportunity for a programmer/analyst to utilise his or her technical and customer liaison skills within my client's U.K. and European offices. 2 years' + IBM COBOL, with MVS and DL/1 is essential, together with the ability to liaise with all levels of staff, and assist in the implementation of a financial system. Strong management prospects for the right candidate. This electronics group offer a bonus scheme, health and life insurance, and relocation where appropriate. Ref. CW2314

SYSTEMS PROGRAMMERS
To £14,000

We have too many positions to advertise! If you can offer 18 months' – 5 years' systems programming experience in an IBM DOS/VSE, MVS or VM/CMS environment together with any of the following: CICS, VTAM, NCP, ACF, JCL, ASSEMBLER, JES 2, we have opportunities available in London, Essex, Herts, Berks, Surrey and Kent with excellent career prospects and benefits. Worth a call! Ref. C/E 6342

IBM PL/1 NORTH WEST LONDON
£10,000

A large engineering concern based in North West London require an IBM PL/1 programmer analyst to join a small development team. The company house an IBM 4341 running under MVS and OS/VS and using IDMS. Applicants with on-line experience preferred although batch programmers will strongly be considered. The company offer an excellent career path for self motivated individuals. Benefits include LV's and S.T.L. Ref. GW2674

RPG II/III

IBM SYSTEM 34 LONDON
c.£12,000

A senior Analyst/Programmer is required by my clients, a major manufacturing concern. A large production control project will shortly be underway and the candidate chosen will heavily assist with the design and implementation of the system and will often deputise in the D.P. Manager's absence. The company offer excellent benefits including S.T.L. subsidised restaurant and non-contributory pension scheme. Ref. GW2739

FULL RETRAINING IBM SYSTEM 38!! N. LONDON/HERTS
To £10,000

A subsidiary of a large multi-national organisation are seeking to recruit an additional programmer/analyst with either an IBM system 34/RPG II background or an IBM System 38/RPG III programmer. Full IBM courses offered to retrain from 34 to 38. You will be developing and enhancing commercial systems and databases. Initially you will be mainly programming but you will move into a more analytical role in the very near future. If you feel you fit the bill then please do not hesitate to apply. Relocation assistance offered. Ref. GW2733

IBM SYSTEM 38 WEST COUNTRY
c.£12,000

Highly professional Information consultancy require an IBM System 38/RPG III analyst/programmer, who is able to offer technical advice to more junior members of staff and who is able to play a leading role. The ideal candidate should have a minimum of 2 years GSD experience with at least 12 months 38/RPG III experience together with a good technical ability. The opportunity to move into management is highly likely. Full relocation assistance is offered. Ref. GW2243

IBM SYSTEM 38 RETRAIN!!! MIDDLESEX
£9-11,000

Due to continued company expansion, this well established and highly respected company are seeking to recruit 2 additional programmers/analysts. They have just upgraded from IBM System 34 to a System 38. Although experienced RPG III programmers would be ideal, they are quite willing to retrain good IBM system 34/RPG II people. The company are on the final stages of conversion work and thereafter will be involved with major development projects. If you can offer 18 months' GSD experience then why not give me a call to discuss these opportunities. Ref. GW2713

OTHERS

DEC/PDP – MACRO 11
To £10,000 + Mort

My Client a major financial organisation based in London is currently seeking to recruit a Programmer/Analyst with MACRO 11 and RSX-11-M experience. You will become a member of a fast expanding department involved in the development of banking and accounting projects. Full training is provided, and there are prospects for advancement into analysis. Benefits include a mortgage subsidy, pension scheme, subsidised restaurant and S.T.L. Ref. AW1010

DEC/VAX – BASIC+
To £12,000

This dynamic London based bureau organisation would like to meet ambitious programmers with a minimum of 2 years' DEC, and BASIC + expertise. You will be immediately involved in developing commercial and financial systems, both in-house and for major clients. Hopefully you will already have had some exposure to analysis although training will be provided. Ref. AW2531.

HEWLETT PACKARD – SENIOR
To £15,000

A project leader is sought by this manufacturing concern, based in Berks. The successful applicant will have a minimum of 5 years' systems and programming experience, including the following: Extensive knowledge of Hewlett Packard 3000; experience of Systems Design; Analysis; Programming and staff supervision duties. They offer you the chance to head a team of highly capable programmers in the development of on-line commercial systems to an extremely high standard. The environment is challenging and the career progression into project management is likely in the future. Ref. AW2267

HEWLETT PACKARD – ANY LANGUAGE
To £9,000

Can you offer a minimum of 6 months' Hewlett Packard 3000 experience in any language? My client based in London is seeking an ambitious programmer to take part in the on-line development of new financial systems on both HP3000 and HP250's in COBOL and BASIC. Any training necessary will be given, although it is hoped that the successful applicant will be familiar with IMAGE, VIEW and QUERY. There will be extensive user contact, and progression to analyst/programmer status is anticipated in the near future. Ref. AW1717

HEWLETT PACKARD – COBOL
£Neg

An exciting opportunity exists for a programmer with in excess of 1 years' HP3000, COBOL experience, to join this Berks based engineering organisation. IMAGE, and VIEW are essential as is the desire to progress into analysis. You will have extensive user contact, and be working in an on-line, development environment. An above average salary is offered and the package includes B.U.P.A., non Contributory Pension Scheme and subsidised restaurant. Ref. AW2135

MINI/MICRO EXP
£9,000

This rapidly expanding Surrey based company require an ambitious Programmer/Analyst with minimum of 18 months' COBOL on any machine although mini or micro would be preferred. Lots of customer support work and liaison. My client markets a special package and candidates will be required to travel initially in England and might eventually involve some European travel. Excellent prospects for forward thinking person who is looking to climb the career ladder. Ref. MW2741

DATA GENERAL
£10,000 +

If you have a minimum of 18 months' Business Basic programming experience and would like the opportunity to get involved in systems analysis, this London based systems house currently requires a good programmer. All development work is of a commercial nature. This position will offer the successful candidate an excellent salary and an interesting and rewarding environment within a large and diverse department offering the chance to gain experience on several different machines. Ref. MW2743

PRIME ANALYST/PROGRAMMER
£9-11,000

This city based chartered accountants currently require an analyst/programmer with two years' COBOL to work on major redevelopment of existing applications. All on-line work and lots of user liaison. This position would ideally suit someone in their 20-30's as it will also involve responsibility and supervision for junior staff. If you think you fit the bill and you're looking for more than a straight analyst/programmer job please contact me at once as this company will be interviewing this week. Ref. MW2742

UNIVAC PROGRAMMER
£8,500

First class career move for a UNIVAC programmer with a minimum of 18 months' COBOL to join this Essex based bank. My client will offer you the exceptional opportunity to retrain on banking applications when you become part of this well established team working to an extremely high standard. The total package includes subsidised lunches and full banking benefits, and you will be working on 1100 kit. Ref. MW1878

SENIOR BURROUGHS SOFTWARE PROGRAMMER
£12,000+

Applications are invited from Senior Burroughs programmers with in excess of five years' communications software experience. The successful candidate will also have a good basic knowledge of specialist communications, in return you will be offered a demanding but rewarding position within this Hampshire based company offering all the usual large company benefits including an excellent remuneration package and relocation assistance where necessary. REF. MW27

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ICE Limited
Littleton House, Littleton Road
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Telephone: (07842) 47171/47271

WELSH JOINT EDUCATION COMMITTEE
CYD-BWYLLGOR ADDYSG CYMRU

COMPUTER PROGRAMMER
Salary Scale 4/5 £6,264 – £8,712

Applications are invited for the new post of COMPUTER PROGRAMMER in the Computer section of the Welsh Joint Education Committee. The Committee uses an ICL ME29 running an on-line examination system and the person appointed will assist the Computer Officer in both development and maintenance programming work. Applicants should be suitably qualified and should preferably have had 2 years experience of working in COBOL and of an ICL ME29.

Further details and application forms (to be returned by 21 September, 1983) may be obtained from the Secretary, Welsh Joint Education Committee, 245 Western Avenue, Cardiff CF5 2YX.

J. L. Brace
Secretary

By November 1st two Senior Systems Programmers will have dramatically changed their lifestyle

Sedgwick are the leading UK multinational broking group operating worldwide, handling insurance business originating from 108 countries. Following breakthroughs in the field of integrated text and data processing utilising a range of IBM 8100 hardware, a significant upgrade and expansion in hardware, software and information processing techniques is now taking place. The current line-up of twin IBM 3032's and 4341's will soon be augmented by the arrival of their first IBM 3083. Large on-line database developments are already underway.

Senior Systems Programmer
Performance & Capacity Planning
c£16,500

In this senior position you will be expected to establish and supervise a small team of technical specialists monitoring system performance and formulating capacity requirements at both tactical and strategic levels. Responsibilities will also include hardware planning and support to Development & Operations in package selection and implementation.

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Sedgwick

Senior Systems Programmer
Communications
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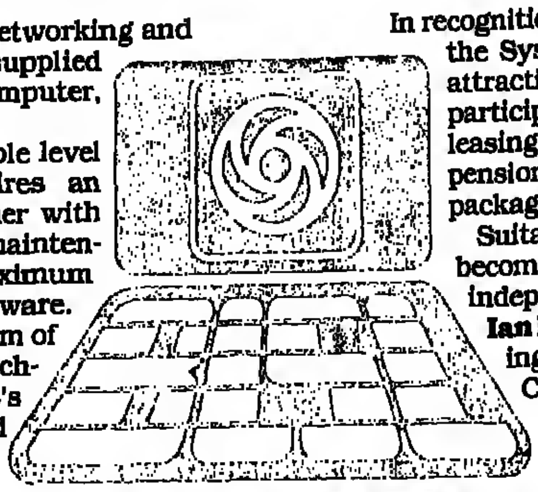

BLSL is the UK's leading supplier of networking and timesharing services, many of which are supplied to Clients complete with a host minicomputer, usually a DEC VAX machine.

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Suitably qualified applicants who wish to become part of the UK's most successful independent software house should contact **Ian Payne** on **021-236 3781** (24 hour answering service) or alternatively, forward a concise CV to him at the Birmingham office as soon as possible.

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Your technical profile will reflect previous program design and development experience in one or more of the following areas:-

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You must have a proven track record in managing or supervising the development of software products from project inception to release. It would be an advantage if you had an appreciation of micro computer hardware.

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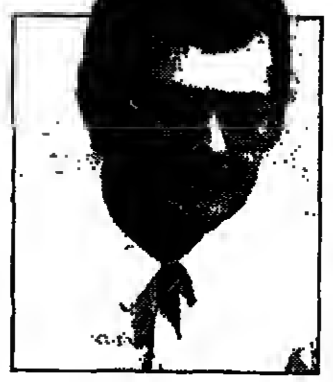

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This opportunity will interest people who have:

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CW/P/727

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4 LONDON WALL BUILDINGS, BLOMFIELD STREET, LONDON [illegible]

Are you game for a challenge?

Because if you are, you'll certainly enjoy the variety and interest offered by Palitoy, the UK's leading toy manufacturer and maker of such famous brands as Star Wars, Action Force and Action Man. We're committed to a major development programme on interactive systems based on the IBM system 38.

Operations Supervisor

We now require an Operations Supervisor, ideally with knowledge of IBM System 34/38, with a minimum of 2-3 years' supervisory experience.
Applicants (male or female) should be educated to good 'A' level standard; a knowledge of programming would be beneficial.

O & M Analyst

To analyse and appraise our existing systems to ensure that users are adequately trained and that procedures are followed. In addition, the man or woman appointed will assist in the design of new interactive systems and be responsible for ensuring all documentation is accurately maintained during this period of intensive systems development.
A background in DP work and considerable O & M experience as applied to computer systems is essential.

Analyst/Programmer

RPG 11/111

To develop interactive systems on our IBM System 38.
We require a minimum of 6 months GSD experience, combined with Analyst/Programming experience, using RPG11/111.
An additional computing language would be a benefit. Good communicative skills are essential to liaise between user and development staff.
As a successful and progressive company we can offer competitive salaries together with attractive employment conditions and relocation where appropriate.

Please write or telephone for an application form to Mrs Anne Jacobs, Personnel Manager, Palitoy Company, Owen Street, Coalville, Leicestershire. Tel: Coalville 36388.

Palitoy

Banking in Kuwait

Salaries to £34,000 pa Tax Free + significant additional benefits

Our client is the oldest and largest commercial Bank in Kuwait. They now wish to fill the following positions to enable them to continue their Management Services development.

Project Managers

We are looking for 2 Project Managers with strong banking experience. Knowledge of retail banking systems, foreign exchange systems, general ledger and overall MIS systems is absolutely essential. Successful applicants will already have a good track record in project management and will be expected to be capable of managing more than one project at a time. They will be given every opportunity to continue to develop their career and will need to be self-starters, who are good at liaising with users and with their own technical staff. (Please quote Ref: 401.)

Co-ordinator-Education Services

We are looking for someone to create an important new function. The successful applicant will be expected to give courses in the majority of the following:- JCL, VSAM, CICS, COBOL plus general systems analysis courses. The successful applicant will be familiar with self-study courses as well as courses given by IBM and other organisations. This is an exciting opportunity for someone to play a major role in Management Services development. (Please quote Ref: 402.)

Data Communications Engineer

We are looking for someone with good practical experience of data networks. A strong knowledge of telecommunications, modems and local area networks is very important. We are looking for someone with good 'hands on experience' who can play the role of the customer engineer. This is a position that is vital to the continued growth of Management Services, and one that will offer an exciting and significant challenge to someone with the right background. (Please quote Ref: 403.)

All the positions advertised offer genuine career opportunities in an advanced Middle East society where the quality of family living is very high. All the positions require between 7 and 10 years experience. Our client will be in the UK at the end of September and interested applicants should send sensibly comprehensive Curriculum Vitae to John Goldsmith at:-

A&A Consultants (Holding) Ltd
County House, 10 Little Portland Street
London W1N 5DF.
Tel: 01-631 4184.

A&A

DALROTH

TAX FREE SALARIES £16,000 – £32,000

+ Accommodation
+ Medical
+ Transportation allowance
+ Home flights
+ Bonus

Our client plans to be in the UK early October to select from our shortlists for these positions. Arabic speaking applicants would be particularly useful.

SAUDI ARABIA

OPERATIONS MANAGER
£20,000 – £25,000

To plan, help configure and supervise the installation and implementation of a multi-CPU TP configuration.
Applicants must have planned and run a large MVS installation and be fully conversant with distributed Network Planning Sizing and Tuning.

OP TRAINER
£16.000 – £22,000

Must have an IBM background and some practical systems and programming experience, ideally using COBOL.
Responsibilities will include the preparation and presentation of training courses covering both appreciation and technical subjects for personnel at junior entry through to senior executive levels.

ADABAS CUSTOMER SUPPORT SPECIALIST
£18,000 – £25,000

Must have in-depth ADABAS experience and be capable of trouble-shooting and installing the Database, NATURAL and related TP Monitors.

HARDWARE ENGINEERS
£16,500 – £24,000

Must be able to work alone, or as a team member, on the maintenance and support of a 4300 Network configuration.
Applicants must have IBM or IBM compatible experience and be capable of diagnosing faults and maintaining peripherals and CPU's.

SENIOR BANKING CONSULTANT
£26,000 – £32,000

Must have a Degree or Professional Qualification and extensive experience in money transfers such as FX or FL.
Must be capable of working as a very high level DP Specialist advising on the Strategic Planning for Domestic and Foreign Monetary activities.

SENIOR DBA and DB PLANNER
£25,000 – £36,000

Must have ADABAS, IMS or DBMS experience. Will be responsible for steering the direction and planning the Database Strategy, of a major new IBM multi-CPU Distributed Networking Project.

SYSTEMS PROGRAMMERS
£19,000 – £24,000

- ★ DOS VSE, ideally with CICS
- ★ OS/VSI under VM, ideally with CICS and DL1
- ★ MVS/JES2 or JES3, ideally with VTAM

SYSTEMS ANALYST AND ANALYST PROGRAMMERS
£16,000 – £23,000

Must have an IBM background and solid project development experience including programming in COBOL.

CONSULTANT PROJECT LEADERS
£22,000 – £26,000

Must be self motivated and capable of Planning, Costing and Running major segments of a large project, or taking total responsibility for a smaller start-up situation. Large IBM Systems experience is essential.

The IBM SYSTEM 34/36/38 Recruitment Specialists

Permanent vacancies
for programmers, analyst programmers and above

March Computer Recruitment is a specialist consultancy which is demonstrating its recruitment expertise with its growth and operating success.

We are inviting you to share our specialist knowledge in the IBM Systems 34/36/38 field with access to a personal service and:

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Phone Richard Milsum, for an informal and confidential discussion of your requirements on: 01-354 1055, during office hours or on 01-958 2553 evenings and weekends. Alternatively please send full details to me at:

(5396)

MARCH COMPUTER RECRUITMENT
1 NOEL ROAD, LONDON N1 8HQ
01-354 1055

COMPUTER OPERATIONS SUPERVISOR/OPERATOR

£6,670-£7,494

Applications are invited for the post of Supervisor/Operator to handle the Scottish component of a new United Kingdom-wide computer development for the nursing profession.

The post is located in refurbished premises in central Edinburgh. The National Board for Nursing, Midwifery and Health Visiting for Scotland will operate an on-line computer database, shared with three other National Boards and a Central Council, using an IBM mainframe computer. The post requires equipment expertise with computers, terminals and telecommunications and knowledge of data handling and control. Local equipment comprises micro-computers, providing batch and on-line V.D.U. facilities.

Further particulars and application forms, to be returned by 23rd September 1983, are available from Mr Peter Taylor, National Board for Nursing, Midwifery and Health Visiting for Scotland, 22 Queen Street, Edinburgh EH2 1JX.

(5373)

IBM PROGRAMMERS to PROJECT LEADERS HERTS/MIDDX. To £19,000

Two major commercial companies require all levels of staff to Project Leaders to meet their expanding development commitments. Sound technical IBM mainframe knowledge, plus ability to plan and control work for small groups of professionals is essential. Applicants must have a minimum of 3-4 years COBOL and/or BAL with a preferred working knowledge of IMS or IDMS in an OS/MVS environment. Ref: C[illegible]

PROJECT MANAGER £16,000 + Car + Bonus

Well-known Software House situated in Middx. needs a Project Manager with sound commercial systems and project management experience to manage turnkey systems, using MINI/MICRO [illegible] DG, DEC equipment. The applicant will ideally have had exposure to a software house environment. Ref: C[illegible]

PROJECT LEADERS MIDDX. c£15,000 + Benefits

Major financial organisation requires Project Leaders with sound experience in the design and implementation of large scale database systems with a working knowledge of either command level CICS or IDMS, preferably in a MVS environment. A knowledge of BAL would be useful but not essential. Excellent career prospects and benefits apply to these key positions. Ref: C[illegible]

D.B.A. X2 MIDDX./LONDON c£15,000+

Two large financial organisations require Database Analysts with a good knowledge of IDMS & COBOL [illegible] IBM background. Middx. IMS & PL1, CICS (London). Positions would ideally suit a Senior Analyst/Programmer or Analyst. Excellent career prospects and benefits apply. Ref: C[illegible]

ANALYST/PROGRAMMERS MIDDX./LONDON £13,000 + Benefits

Two large financial companies need Analyst/Programmers with a minimum of two years IBM COBOL preferably gained in a database environment using MVS to take leading roles in their developments. A knowledge of BAL would be useful but not essential. Vacancies exist for BAL Programmers. Excellent career path and benefits apply. Ref: C[illegible]

IBM PROGRAMMERS MIDDX. £12,000 + Benefits

[illegible]

SYSTEMS ANALYST LONDON £12,000 + Mortgage

[illegible]

COBOL PROGRAMMERS (ANY MAINFRAME) SURREY c£11,000

[illegible]

TRAIN in RPG3 SOUTH COAST To £11,000

[illegible]

OPERATIONS

OPERATIONS MANAGER ESSEX £12,000

[illegible]

DEC OPERATOR LONDON To £10,000 + Mortgage

[illegible]

JNR OPS ANALYST SURREY £9,000+

[illegible]

MVS OPERATOR LONDON £8,600+

[illegible]

DOS OPERATOR SURREY/LONDON To £8,300 + Mortgage

[illegible]

GSD OPERATORS LONDON £6,500+

[illegible]

BUICK COMPUTER SERVICES
RECRUITMENT DIVISION
72 Rochester Row, Victoria, London SW1P 1J[illegible]
BCS Tel: 01-834 8061 (24-hour)
or call evenings and weekends
REF: A&B: 01-[illegible]
REF. C: 01-[illegible]

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If you are well qualified and have 3 years + REAL-TIME S/W experience then expand your potential – get involved in:
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- ★ Ion Beam Control
- ★ S/W Quality + Methodology
- ★ VAX/M68000/IBM pc

For more details about this unusual, non-defence opportunity, call Vincent Malling on 01-549 8441 (24 hours) (5372)

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Successful business micro company – steady growth (now 25 strong in UK) – have a full order book for their distributed processor systems – and believe in good support for their dealers and users. Incl. Europe. With this team, you will enjoy variety, meeting people, solving problems and RECOGNITION!
Good applications/technical/support experience will qualify for higher salary – but style is more important!
Ring Allen Sanders 01-549 5441 (24 hours) to discuss. Ref. CA369. (5392)

ab executive (kingston) ltd
Technical Support Specialists

CAD/CAM SUPPORT PERSONNEL

A leading supplier of Computer Aided Engineering Systems requires support personnel to meet the increasing expansion of business within the United Kingdom.

Customer Support Engineers
Circa £8,000-£11,000

The positions offer excellent opportunities for engineers and computer scientists with experience in the field of CAD/CAM. The successful candidates will work closely with our customers in the development of installed CAD/CAM Systems. In particular duties will include the installation of software on Mini Computer Systems as well as providing on-line customer support. The positions will particularly appeal to individuals interested in solving problems in an engineering environment.
Applicants will be educated to degree or HNC standard with at least two years' relevant experience. A knowledge of FORTRAN and VMS or PRIMOS will be considered an advantage.
The positions are Cambridge based.
A company car will be provided after an initial induction period.
Relocation package available if required.
Please write, in confidence, enclosing full resume of career to date to:

CIS products
Mr P. H. Kernot at
CIS (Products) LTD
Queyside
CAMBRIDGE CB5 8AB

(5252)

Contract and/or Permanent
Technical Authors

Hardware and Software authors for a large number of clients on projects covering the following topics

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- Software minis and micros, commercial applications
- Electronics, marine applications, analogue experience advantageous HW/SW
- Engineering and medical instrumentation HW/SW
- CPU hardware and instruction sets
- Broad based software, commercial applications
- Intelligent terminal documentation HW/SW
- Process control documentation, HW/SW.
- Telecommunication and networking documentation HW/SW
- Real-time and/or data communications HW/SW

Locations, various Ref. 04/08

Outlined above is a selection of our current requirements, space and time make it impossible to list them all, however, if you are thinking of changing your job please telephone for an initial discussion or send a copy of your resumé for both contract and permanent positions

Take this opportunity to discuss these and other requirements by phoning Hitchin (0462) 57141, or write to

Marketing & Recruitment Division
Industrial Artists Limited
21 Bancroft, Hitchin
Hertfordshire SG5 1JP

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Semiconductor Sales & Systems Design

Advance your career with a major world leader

Continuous innovation, research and development, an expanding product range and not least, a determined, aggressive marketing policy all combine to make us one of the world's most successful high technology manufacturing companies.

And we aim to keep that position.

To help us, we require electronics graduates with several years experience in an electronics design, development or applications environment to work as:

FIELD SALES ENGINEERS

Selling our semiconductor range throughout the UK you will be at the sharp end of the business with total responsibility for major accounts. Your technical knowledge must be supported by sound commercial awareness, enthusiasm, personality and drive. Sales experience would be a distinct advantage – but full training will be given.

FIELD SYSTEMS SPECIALISTS

Working hand in hand with the Field Sales Engineers on major accounts you will be designing our high technology leadership products into equipments to meet specific customer needs. You will need to be well used to working under pressure as strict commercial deadlines have to be met. Ideally you will also possess some microprocessor hardware/software experience.

You will be working on our extensive product range which includes VSLI and LSI integrated circuits, transistors, opto-electronic devices, microprocessors, microcomputers, advanced digital signal processors, semiconductor memories, gate arrays and VLSI programmable system components.

In return for your skills the benefits package will reflect the importance we place on these positions – competitive salary, quality car etc. Field Sales Engineers can also look forward to an excellent commission scheme. Career prospects depend entirely on your own ability – not something many top companies can honestly claim.

To advance your career in high technology send a c.v. to Gwen Ventris or contact her for an application form at Texas Instruments Limited, Manton Lane, Bedford MK41 7PA. Tel: 0234 67466.

TEXAS INSTRUMENTS
Creating useful products and services for you.

(5310)

IMS DB/DC COBOL or PL/1

PROGRAMMERS ANALYST/PROGRAMMERS

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COMPUTER SEARCH & SELECTION
Hamilton House, Marlowes, Hemel Hempstead, Herts. HP1 1BB

Computer Professionals PARS/ACP/TPF

Specialist Programmers/Analysts Come to

SAN FRANCISCO

Our client is one of the world's largest financial institutions, a leading commercial bank with headquarters in San Francisco, California.

The bank is now undertaking a major change in on-line systems strategy. This will enable it to maintain an established position of leadership in retail banking and will also provide a base for aggressive expansion into new banking products and services.

A number of new positions are being created as the bank supplements existing IMS systems with a newly-conceived Transaction Processing Facility.

Career opportunities are available for qualified professional programmers and analysts who have had at least 3 years' experience in PARS/ACP/TPF environments. Positions are open at various levels of technical and managerial skill and interest.

Our client provides salaries and benefits appropriate to the US compensation practices for each position. The cultural, recreational and educational advantages of San Francisco are unique in the world. Immigration and relocation assistance will be arranged. Local interviews will be held in October.

Please send full c.v. with home phone number, quoting ref: 1109/CW to

Philip Smith
Manpower Consultants
85-87 Jermyn Street, London SW1Y 6JD

(5320)